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AERODYNAMIC CHARACTERISTICS INVESTIGATION OF
BOEING 747 CARRIER (MODEL NO. AX 1319 I-1).
MATED WITH A SPACE SHUTTLE ORBITER (MODEL
45-0) CONDUCTED IN THE BOEING TRANSONIC WIND G3/18 . 42994
Unclas

SPACE SHUTTLE

AEROTHERMODYNAMIC DATA REPORT

JOHNSON SPACE CENTER

HOUSTON, TEXAS .

DATA MANAGEMENT services

SPACE DIVISION



CHRYSLER
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VOLUME 1 of 3

RESULTS OF A 0.03-SCALE AERODYNAMIC CHARACTERISTICS
INVESTIGATION OF A BOEING 747 CARRIER
(MODEL NO. AX 1319 I-1) MATED WITH A SPACE
SHUTTLE ORBITER (MODEL 45-0) CONDUCTED IN
THE BOEING TRANSONIC WIND TUNNEL (CA5)

by

747 Aerodynamics, 747 Flight Controls
and Wind Tunnel Test Group,
Boeing Aerospace Company

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by

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New Orleans, La. 70189

for

Engineering Analysis Division
Johnson Space Center
National Aeronautics and Space Administration
Houston, Texas

WIND TUNNEL TEST SPECIFICS:

Test Number; BTWT 1431
NASA Series Number; CA5
Model Number; AX 1319 I-1 (Carrier), 45-0 (Orbiter)
Test Dates; September 20 through September 30, 1974
Occupancy Hours; 65.3

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Chrysler Corporation Space Division assumes no responsibility for the data presented other than display characteristics.

RESULTS OF A 0.03-SCALE AERODYNAMIC CHARACTERISTICS
INVESTIGATION OF A BOEING 747 CARRIER
(MODEL NO. AX 1319 I-1) MATED WITH A SPACE
SHUTTLE ORBITER (MODEL 45-0) CONDUCTED IN THE
BOEING TRANSONIC WIND TUNNEL (CA5)

by

747 Aerodynamics, 747 Flight Controls and Wind Tunnel Test Group,
Boeing Aerospace Company

ABSTRACT

This report presents results of an experimental aerodynamic investigation of the Boeing 747/Space Shuttle Carrier aircraft conducted in the Boeing Transonic Wind Tunnel during September 1974. The objective of these tests was to determine performance, stability, and control characteristics of various carrier aircraft configurations. Aerodynamic characteristics of the carrier mated with the Orbiter, carrier alone, and Orbiter alone were investigated. Carrier support system tare and interference effects were determined.

Six-component force and moment data were recorded for the carrier and Orbiter. Buffet onset characteristics of the carrier vertical tail and horizontal tail were recorded. Angles of attack from -3° through 26° and angles of sideslip between $+12^\circ$ and -12° were investigated at Mach numbers from 0.15 through 0.70.

This report for CA5 consists of three volumes: Volume 1 - data figures 1 to 200; Volume 2 - data figures 201 to 260; Volume 3 - tabulated source data.

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FIG. 133	747 + ORB (8 DEG) + TIP FINS + STD SPD BRK, FLAPS UP LAUNCH, ALPHAI = 6 DEG	747	D	500-502
FIG. 134	747 + ORB (8 DEG) + TIP FINS + STD SPD BRK, FLAPS UP LAUNCH, ALPHAI = 6 DEG	ORB	C	503-505
FIG. 135	747 + ORB (8 DEG) + TIP FINS + STD SPD BRK, FLAPS UP LAUNCH, ALPI = 6, RUD = 10/10	TOTAL	C	506-508
FIG. 136	747 + ORB (8 DEG) + TIP FINS + STD SPD BRK, FLAPS UP LAUNCH, ALPI = 6, RUD = 10/10	747	D	509-511
FIG. 137	747 + ORB (8 DEG) + TIP FINS + STD SPD BRK, FLAPS UP LAUNCH, ALPI = 6, RUD = 10/10	ORB	C	512-514
FIG. 138	747 + ORB (8 DEG) + TIP FINS, FLAPS UP LAUNCH, ALPHAI = 6 DEG	TOTAL	C	515-517

INDEX OF DATA FIGURES (Continued)

FIGURE NUMBER	TITLE		COEFFICIENT SCHEDULE	PAGES
FIG. 139	747 + ORB (8 DEG) + TIP FINS, FLAPS UP LAUNCH, ALPHAI = 6 DEG	747	D	518-520
FIG. 140	747 + ORB (8 DEG) + TIP FINS, FLAPS UP LAUNCH, ALPHAI = 6 DEG	ORB	C	521-523
FIG. 141	747 + ORB (8 DEG) + TIP FINS + STD SPD BRK, FLAPS UP LAUNCH, ALPHAI = 6, TC OFF	TOTAL	C	524-526
FIG. 142	747 + ORB (8 DEG) + TIP FINS + STD SPD BRK, FLAPS UP LAUNCH, ALPHAI = 6, TC OFF	747	D	527-529
FIG. 143	747 + ORB (8 DEG) + TIP FINS + STD SPD BRK, FLAPS UP LAUNCH, ALPHAI = 6, TC OFF	ORB	C	530-532
FIG. 144	747 + ORB (8 DEG) + TIP FINS + STD SPD BRK, FLAPUP LNCH, ALP = 6, TC OFF, R = 10/10	TOTAL	C	533-535
FIG. 145	747 + ORB (8 DEG) + TIP FINS + STD SPD BRK, FLAPUP LNCH, ALP = 6, TC OFF, R = 10/10	747	D	536-538
FIG. 146	747 + ORB (8 DEG) + TIP FINS + STD SPD BRK, FLAPUP LNCH, ALP = 6, TC OFF, R = 10/10	ORB	C	539-541
FIG. 147	747 + ORB (10 DEG) + TIP FINS + STD SPD BRK, FLAPS UP LAUNCH, ALPHAI = 6 DEG	TOTAL	C	542-544
FIG. 148	747 + ORB (10 DEG) + TIP FINS + STD SPD BRK, FLAPS UP LAUNCH, ALPHAI = 6 DEG	747	D	545-547
FIG. 149	747 + ORB (10 DEG) + TIP FINS + STD SPD BRK, FLAPS UP LAUNCH, ALPHAI = 6 DEG	ORB	C	548-550

INDEX OF DATA FIGURES (Continued)

FIGURE NUMBER	TITLE		COEFFICIENT SCHEDULE	PAGES
FIG. 150	747 + ORB (8 DEG) + STD SP, VERT TAIL OFF, FLAP UP LNCH, ALPHAI = 6, TC OFF	TOTAL	C	551-553
FIG. 151	747 + ORB (8 DEG) + STD SP, VERT TAIL OFF, FLAP UP LNCH, ALPHAI = 6, TC OFF	747	D	554-556
FIG. 152	747 + ORB (8 DEG) + STD SP, VERT TAIL OFF, FLAP UP LNCH, ALPHAI = 6, TC OFF	ORB	C	557-559
FIG. 153	747 + ORB (8 DEG) + TIP FINS + STD SP, FLAPS UP LNCH, ALPI = 6, ORB ELEV = 5	TOTAL	C	560-562
FIG. 154	747 + ORB (8 DEG) + TIP FINS + STD SP, FLAPS UP LNCH, ALPI = 6, ORB ELEV = 5	747	D	563-565
FIG. 155	747 + ORB (8 DEG) + TIP FINS + STD SP, FLAPS UP LNCH, ALPI = 6, ORB ELEV = 5	ORB	C	566-568
FIG. 156	747 + ORB (8 DEG) + STD SP, VERT TAIL OFF, FLAPS UP, ALPI = 2, DE = 0/0 (S = -1)	TOTAL	C	569-571
FIG. 157	747 + ORB (8 DEG) + STD SP, VERT TAIL OFF, FLAPS UP, ALPI = 2, DE = 0/0 (S = -1)	747	D	572-574
FIG. 158	747 + ORB (8 DEG) + STD SP, VERT TAIL OFF, FLAPS UP, ALPI = 2, DE = 0/0 (S = -1)	ORB	C	575-577
FIG. 159	747 + ORB (8 DEG) + STD SP, VERT TAIL OFF, FLAPS UP, ALPI = 6, DE = 0/0 (S = -1)	TOTAL	C	578-580
FIG. 160	747 + ORB (8 DEG) + STD SP, VERT TAIL OFF, FLAPS UP, ALPI = 6, DE = 0/0 (S = -1)	747	D	581-583

INDEX OF DATA FIGURES (Continued)

FIGURE NUMBER	TITLE		COEFFICIENT SCHEDULE	PAGES
FIG. 161	747 + ORB (8 DEG) + STD SP, VERT TAIL OFF, FLAPS UP, ALPI = 6, DE = 0/0 (S = -1)	ORB	C	584-586
FIG. 162	747 + ORB (8 DEG) + STD SP, VERT TAIL OFF, FLAPS UP, ALPI = 6, DE = 0/0 (S = +1)	TOTAL	C	587-589
FIG. 163	747 + ORB (8 DEG) + STD SP, VERT TAIL OFF, FLAPS UP, ALPI = 6, DE = 0/0 (S = +1)	747	D	590-592
FIG. 164	747 + ORB (8 DEG) + STD SP, VERT TAIL OFF, FLAPS UP, ALPI = 6, DE = 0/0 (S = +1)	ORB	C	593-595
FIG. 165	747 + ORB (4 DEG), VERT TAIL OFF, FLAPS UP FERRY, ALPHAI = 2 (S = -2)	TOTAL	C	596-598
FIG. 166	747 + ORB (4 DEG), VERT TAIL OFF, FLAPS UP FERRY, ALPHAI = 2 (S = -2)	747	D	599-601
FIG. 167	747 + ORB (4 DEG), VERT TAIL OFF, FLAPS UP FERRY, ALPHAI = 2 (S = -2)	ORB	C	602-604
FIG. 168	747 + ORB (4 DEG), VERT TAIL OFF, FLAPS UP FERRY, ALPHAI = 6 (S = -2)	TOTAL	C	605-607
FIG. 169	747 + ORB (4 DEG), VERT TAIL OFF, FLAPS UP FERRY, ALPHAI = 6 (S = -2)	747	D	608-610
FIG. 170	747 + ORB (4 DEG), VERT TAIL OFF, FLAPS UP FERRY, ALPHAI = 6 (S = -2)	ORB	C	611-613
FIG. 171	747 + ORB (4 DEG), BASIC TAIL, FLAPS UP FERRY, ALPHAI = 8 (S = -2)	TOTAL	C	614-616

INDEX OF DATA FIGURES (Continued)

FIGURE NUMBER	TITLE		COEFFICIENT SCHEDULE	PAGES
FIG. 172	747 + ORB (4 DEG), BASIC TAIL, FLAPS UP FERRY, ALPHAI = 8 (S = -2)	747	D	617-619
FIG. 173	747 + ORB (4 DEG), BASIC TAIL, FLAPS UP FERRY, ALPHAI = 8 (S = -2)	ORB	C	620-622
FIG. 174	747 + ORB (4 DEG), BASIC TAIL, FLAPS UP FERRY, ALPHAI = 2 (S = -3.2)	TOTAL	C	623-625
FIG. 175	747 + ORB (4 DEG), BASIC TAIL, FLAPS UP FERRY, ALPHAI = 2 (S = -3.2)	747	D	626-628
FIG. 176	747 + ORB (4 DEG), BASIC TAIL, FLAPS UP FERRY, ALPHAI = 2 (S = -3.2)	ORB	C	629-631
FIG. 177	747 + ORB (4 DEG), BASIC TAIL, FLAPS UP FERRY, ALPHAI = 6 (S = -3.2)	TOTAL	C	632-634
FIG. 178	747 + ORB (4 DEG), BASIC TAIL, FLAPS UP FERRY, ALPHAI = 6 (S = -3.2)	747	D	635-637
FIG. 179	747 + ORB (4 DEG), BASIC TAIL, FLAPS UP FERRY, ALPHAI = 6 (S = -3.2)	ORB	C	638-640
FIG. 180	747 + ORB (4 DEG), BASIC TAIL, FLAPS UP FERRY, ALPHAI = 8 (S = -3.2)	TOTAL	C	641-643
FIG. 181	747 + ORB (4 DEG), BASIC TAIL, FLAPS UP FERRY, ALPHAI = 8 (S = -3.2)	747	D	644-646
FIG. 182	747 + ORB (4 DEG), BASIC TAIL, FLAPS UP FERRY, ALPHAI = 8 (S = -3.2)	ORB	C	647-649

INDEX OF DATA FIGURES (Continued)

FIGURE NUMBER	TITLE		COEFFICIENT SCHEDULE	PAGES
FIG. 183	747 + ORB (4 DEG) + TIP FINS, FLAPS UP FERRY, ALPHAI = 2 (S = -3.2)	TOTAL	C	650-652
FIG. 184	747 + ORB (4 DEG) + TIP FINS, FLAPS UP FERRY, ALPHAI = 2 (S = -3.2)	747	D	653-655
FIG. 185	747 + ORB (4 DEG) + TIP FINS, FLAPS UP FERRY, ALPHAI = 2 (S = -3.2)	ORB	C	656-658
FIG. 186	747 + ORB (4 DEG) + TIP FINS, FLAPS UP FERRY, ALPHAI = 6 (S = -3.2)	TOTAL	C	659-661
FIG. 187	747 + ORB (4 DEG) + TIP FINS, FLAPS UP FERRY, ALPHAI = 6 (S = -3.2)	747	D	662-664
FIG. 188	747 + ORB (4 DEG) + TIP FINS, FLAPS UP FERRY, ALPHAI = 6 (S = -3.2)	ORB	C	665-667
FIG. 189	747 + ORB (4 DEG) + TIP FINS, FLAPS UP FERRY, ALPHAI = 8 (S = -3.2)	TOTAL	C	668-670
FIG. 190	747 + ORB (4 DEG) + TIP FINS, FLAPS UP FERRY, ALPHAI = 8 (S = -3.2)	747	D	671-673
FIG. 191	747 + ORB (4 DEG) + TIP FINS, FLAPS UP FERRY, ALPHAI = 8 (S = -3.2)	ORB	C	674-676
FIG. 192	747 + ORB (4 DEG) + TIP FINS, FLAPS UP FERRY, ALPHAI = 6 (S = -2)	TOTAL	C	677-679
FIG. 193	747 + ORB (4 DEG) + TIP FINS, FLAPS UP FERRY, ALPHAI = 6 (S = -2)	747	D	680-682

INDEX OF DATA FIGURES (Continued)

FIGURE NUMBER	TITLE		COEFFICIENT SCHEDULE	PAGES
FIG. 194	747 + ORB (4 DEG) + TIP FINS, FLAPS UP FERRY, ALPHAI = 6 (S = -2).	ORB	C	683-685
FIG. 195	747 + ORB (4 DEG) + TIP FINS, FLAPS UP, ALPHAI = 6, RUDDER = 10/10	TOTAL	C	686-688
FIG. 196	747 + ORB (4 DEG) + TIP FINS, FLAPS UP, ALPHAI = 6, RUDDER = 10/10	747	D	689-691
FIG. 197	747 + ORB (4 DEG) + TIP FINS, FLAPS UP, ALPHAI = 6, RUDDER = 10/10	ORB	C	692-694
FIG. 198	747 + ORB (4 DEG) + TIP FINS, FLAPS UP, ALPHAI = 2, RUDDER = 10/10	TOTAL	C	695-697
FIG. 199	747 + ORB (4 DEG) + TIP FINS, FLAPS UP, ALPHAI = 2, RUDDER = 10/10	747	D	698-700
FIG. 200	747 + ORB (4 DEG) + TIP FINS, FLAPS UP, ALPHAI = 2, RUDDER = 10/10	ORB	C	701-703
<u>VOLUME 2</u> FIG. 201	747 + ORB (4 DEG) + TIP FINS, FLAPS UP, ALPHAI = 8, RUDDER = 10/10	TOTAL	C	704-706
FIG. 202	747 + ORB (4 DEG) + TIP FINS, FLAPS UP, ALPHAI = 8, RUDDER = 10/10	747	D	707-709
FIG. 203	747 + ORB (4 DEG) + TIP FINS, FLAPS UP, ALPHAI = 8, RUDDER = 10/10	ORB	C	710-712
FIG. 204	747 + ORB (4 DEG) + TIP FINS, FLAPS UP, ALPHAI = 6, RUDDER = 10/10	TOTAL	C	713-715

INDEX OF DATA FIGURES (Continued)

FIGURE NUMBER	TITLE		COEFFICIENT SCHEDULE	PAGES
FIG. 205	747 + ORB (4 DEG) + TIP FINS, FLAPS UP, ALPHAI = 6, RUDDER = 10/10	747	D	716-718
FIG. 206	747 + ORB (4 DEG) + TIP FINS, FLAPS UP, ALPHAI = 6, RUDDER = 10/10	ORB	C	719-721
FIG. 207	747 + ORB (4 DEG) + TIP FINS, FLAPS UP, ALPHAI = 6, TAIL CONE OFF	TOTAL	C	722-724
FIG. 208	747 + ORB (4 DEG) + TIP FINS, FLAPS UP, ALPHAI = 6, TAIL CONE OFF	747	D	725-727
FIG. 209	747 + ORB (4 DEG) + TIP FINS, FLAPS UP, ALPHAI = 6, TAIL CONE OFF	ORB	C	728-730
FIG. 210	ORBITER ALONE, TAIL CONE OFF, ALPHAI = 8 DEG		C	731-733
FIG. 211	ORBITER ALONE, TAIL CONE OFF, ALPHAI = 15 DEG		C	734-736
FIG. 212	ORBITER ALONE, TAIL CONE ON, ALPHAI = 8 DEG		C	737-739
FIG. 213	ORBITER ALONE, TAIL CONE ON, ALPHAI = 15 DEG		C	740-742
FIG. 214	747 ALONE, EFFECT OF STD IN-FLIGHT SPEED BRAKES, FLAPS UP		A	743-750
FIG. 215	747 + ORB (8 DEG), EFFECT OF STD IN-FLIGHT SPEED BRAKES, FLAPS UP		A	751-766
FIG. 216	BASIC 747 + ORB (10 DEG), EFFECT OF FULL 45 DEG SPOILERS, FLAPS 20		A	767-778
FIG. 217	747 ALONE, EFFECT OF FULL 45 DEG SPOILERS, FLAPS 20		A	779-782

INDEX OF DATA FIGURES (Continued)

FIGURE NUMBER	TITLE	COEFFICIENT SCHEDULE	PAGES
FIG. 218	747 + ORB (10 DEG), EFFECT OF STD BRAKES OR FULL 45 SPOILERS, FLAPS 20	A	783-794
FIG. 219	747 + ORB, EFFECT OF ORB INCIDENCE, FLAPS UP FERRY CONFIGURATION	A	795-810
FIG. 220	747 + ORB, EFFECT OF ORB INCIDENCE, FLAPS 20 LAUNCH CONFIGURATION	A	811-822
FIG. 221	747 + ORB, EFFECT OF ORB INCIDENCE, FLAPS UP LAUNCH CONFIGURATION	A	823-838
FIG. 222	747 + ORB (4 DEG), EFFECT OF TAIL CONE, FLAPS UP FERRY CONFIG.	A	839-854
FIG. 223	747 + ORB (8 DEG), EFFECT OF TAIL CONE, FLAPS UP LAUNCH CONFIG.	A	855-870
FIG. 224	747 ALONE, EFFECT OF HORIZ TIP FINS, FLAPS UP	A	871-890
FIG. 225	747 + ORB (4 DEG), EFFECT OF HORIZ TIP FINS, FLAPS UP FERRY	A	891-906
FIG. 226	747 ALONE, EFFECT OF HORIZ TIP FINS, FLAPS 20	A	907-922
FIG. 227	747 + ORB (10 DEG), EFFECT OF HORIZ TIP FINS, FLAPS 20 LAUNCH	A	923-934
FIG. 228	747 ALONE, EFFECT OF ORB SUPPORTS, FLAPS UP	A	935-950
FIG. 229	747 ALONE, STABILIZER EFFECT, FLAPS UP	A	951-970
FIG. 230	747 + ORB (8 DEG), STABILIZER EFFECT, FLAPS UP LAUNCH	A	971-990
FIG. 231	747 + ORB (4 DEG), STABILIZER EFFECT, FLAPS UP FERRY	A	991-1010

INDEX OF DATA FIGURES (Continued)

FIGURE NUMBER	TITLE	COEFFICIENT SCHEDULE	PAGES
FIG. 232	747 + ORB (10 DEG), STABILIZER EFFECT, FLAPS 20 LAUNCH	A	1011-1022
FIG. 233	747 ALONE, ELEVATOR EFFECT FLAPS UP	A	1023-1026
FIG. 234	747 ALONE, EFFECT OF 5 DEG SIDESLIP, FLAPS UP	E	1027-1040
FIG. 235	747 ALONE, RUDDER EFFECT (BETA = 0), FLAPS UP	E	1041-1047
FIG. 236	747 + ORB (8 DEG), ELEVATOR EFFECT, FLAPS UP LAUNCH	A	1048-1063
FIG. 237	747 + ORB (8 DEG), ELEVATOR EFFECT, FLAPS UP LAUNCH, TAIL CONE OFF	A	1064-1079
FIG. 238	747 + ORB (4 DEG), ELEVATOR EFFECT, FLAPS UP FERRY	A	1080-1095
FIG. 239	747 ALONE, ELEVATOR EFFECT, FLAPS 20	A	1096-1099
FIG. 240	747 + ORB (8 DEG), EFFECT OF ORBITER ELEVON, FLAPS UP	A	1100-1107
FIG. 241	747 + ORB (8 DEG), STABILIZER EFFECT, FLAPS UP LAUNCH, TAIL CONE OFF	A	1108-1123
FIG. 242	BASIC 747 + ORB (4 DEG), STABILIZER EFFECT, FLAPS UP FERRY	A	1124-1139
FIG. 243	747 + ORB, EFFECT OF FLAPS ON LAUNCH CONFIG.	A	1140-1151
FIG. 244	747 ALONE, EFFECT OF HORIZ TIP FINS, FLAPS UP	C	1152-1166
FIG. 245	747 + ORB (4 DEG), EFFECT OF HORIZ TIP FINS, FLAPS UP FERRY	C	1167-1181
FIG. 246	747 ALONE, EFFECT OF HORIZ TIP FINS, FLAPS 20	C	1182-1190
FIG. 247	747 + ORB (10 DEG), EFFECT OF HORIZ TIP FINS, FLAPS 20 LAUNCH	C	1191-1199

INDEX OF DATA FIGURES (Continued)

FIGURE NUMBER	TITLE	COEFFICIENT SCHEDULE	PAGES
FIG. 248	747 ALONE, RUDDER EFFECT WITH ORB SUPPORTS, FLAPS UP, ALPHA I = 6 DEG	C	1200-1205
FIG. 249	747 + ORB (4 DEG), RUDDER EFFECT, FLAPS UP FERRY, ALPHA I = 6 DEG	C	1206-1217
FIG. 250	747 + ORB (4 DEG), EFFECT OF ALPHA, FLAPS UP FERRY.	C	1218-1232
FIG. 251	747 + ORB (8 DEG), RUDDER EFFECT, FLAPS UP LAUNCH, ALPHA I = 6 DEG	C	1233-1244
FIG. 252	747 + ORB (8 DEG), RUDDER EFFECT, TAIL CONE OFF, FLAPS UP LAUNCH, ALPHA I = 6	C	1245-1256
24 FIG. 253	747 + ORB (8 DEG), EFFECT OF ORB ELEVONS, FLAPS UP LAUNCH	C	1257-1262
FIG. 254	747 + ORB (4 DEG), EFFECT OF TAIL CONE, FLAPS UP FERRY	C	1263-1274
FIG. 255	747 + ORB (8 DEG), EFFECT OF TAIL CONE, FLAPS UP LAUNCH	C	1275-1286
FIG. 256	747 + ORB, EFFECT OF ORB INCIDENCE, FLAPS UP LAUNCH	C	1287-1298
FIG. 257	747 + ORB, EFFECT OF ORB INCIDENCE, FLAPS 20 LAUNCH	C	1299-1307
FIG. 258	747 + ORB, EFFECT OF ORB INCIDENCE, FLAPS UP FERRY	C	1308-1319
FIG. 259	747 + ORB (10 DEG), RUDDER EFFECT, FLAPS 20 LAUNCH, ALPHA I = 6 DEG	C	1320-1328
FIG. 260	747 + ORB (10 DEG), EFFECT OF FULL 45 DEG SPOILERS, FLAPS 20	C	1329-1337

INDEX OF DATA FIGURES (Concluded)

COEFFICIENT SCHEDULE:

A: CL vs. ALPHAW; CL vs. CD; CL, ALPHAW vs. CLM

B: DCL vs. ALPHAW; DCL vs. DCD; DCL, ALPHAW vs. DCLM

C: CY, CLN, CSL vs. BETA

D: DCY, DCLN, DCSL vs. BETA

E: CL vs. ALPHAW; CL vs. CD; CL, ALPHAW vs. CLM;
CY, CLN, CSL vs. ALPHAW

F: CL vs. ALPHA; CL vs. CD; CL, ALPHA vs. CLM

NOMENCLATURE
General

<u>SYMBOL</u>	<u>PLOT SYMBOL</u>	<u>DEFINITION</u>
a		speed of sound; m/sec, ft/sec
C _p	CP	pressure coefficient; $(p_1 - p_\infty)/q$
M	MACH	Mach number; V/a
p		pressure; N/m ² , psf
q	Q(NSM) Q(PSF)	dynamic pressure; $1/2\rho V^2$, N/m ² , psf
RN/L	RN/L	unit Reynolds number; per m, per ft
V		velocity; m/sec, ft/sec
α	ALPHA	angle of attack, degrees
β	BETA	angle of sideslip, degrees
ψ	PSI	angle of yaw, degrees
ϕ	PHI	angle of roll, degrees
ρ		mass density; kg/m ³ , slugs/ft ³

Reference & C.G. Definitions

A _b		base area; m ² , ft ²
b	BREF	wing span or reference span; m, ft
c.g.		center of gravity
$\frac{l_{REF}}{c}$	LREF	reference length or wing mean aerodynamic chord; m, ft
S	SREF	wing area or reference area; m ² , ft ²
	MRP	moment reference point
	XMRP	moment reference point on X axis
	YMRP	moment reference point on Y axis
	ZMRP	moment reference point on Z axis

SUBSCRIPTS

b	base
l	local
s	static conditions
t	total conditions
∞	free stream

NOMENCLATURE (Continued)

Body-Axis System

<u>SYMBOL</u>	<u>PLOT SYMBOL</u>	<u>DEFINITION</u>
C_N	CN	normal-force coefficient; $\frac{\text{normal force}}{qS}$
C_A	CA	axial-force coefficient; $\frac{\text{axial force}}{qS}$
C_Y	CY	side-force coefficient; $\frac{\text{side force}}{qS}$
C_{A_b}	CAB	base-force coefficient; $\frac{\text{base force}}{qS}$ $-A_b(p_b - p_\infty)/qS$
C_{A_f}	CAF	forebody axial force coefficient, $C_A - C_{A_b}$
C_m	CIM	pitching-moment coefficient; $\frac{\text{pitching moment}}{qS l_{REF}}$
C_n	CYN	yawing-moment coefficient; $\frac{\text{yawing moment}}{qS b}$
C_l	CEL	rolling-moment coefficient; $\frac{\text{rolling moment}}{qS b}$

Stability-Axis System

C_L	CL	lift coefficient; $\frac{\text{lift}}{qS}$
C_D	CD	drag coefficient; $\frac{\text{drag}}{qS}$
C_{D_b}	CDB	base-drag coefficient; $\frac{\text{base drag}}{qS}$
C_{D_f}	CDF	forebody drag coefficient; $C_D - C_{D_b}$
C_Y	CY	side-force coefficient; $\frac{\text{side force}}{qS}$
C_m	CIM	pitching-moment coefficient; $\frac{\text{pitching moment}}{qS l_{REF}}$
C_n	CLN	yawing-moment coefficient; $\frac{\text{yawing moment}}{qS b}$
C_l	CSL	rolling-moment coefficient; $\frac{\text{rolling moment}}{qS b}$
L/D	L/D	lift-to-drag ratio; C_L/C_D
L/D_f	L/DF	lift to forebody drag ratio; C_L/C_{D_f}

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NOMENCLATURE (Continued)
Additions to Standard List

<u>Symbol</u>	<u>Plot Symbol</u>	<u>Definition</u>
BSTA		carrier fuselage station, in.
BWL		carrier water line, in.
FS		fuselage station, in.
i_{ORB}	IORB	Orbiter incidence angle, deg.
MS		model station, in.
S_{i-j}	$Si-j$	spoiler nos. i through j deflection angle, deg.
WL		waterline, in.
WP		water plane, in.
X_c	XC	carrier longitudinal station, in.
X_o	XO	Orbiter longitudinal station, in.
Y_c	YC	carrier lateral station, in.
Y_o	YO	Orbiter lateral station, in.
Z_c	ZC	carrier vertical station, in.
Z_o	ZO	Orbiter vertical station, in.
α_c	ALPHAC	carrier fuselage angle of attack, deg.
α_0	ALPHA	Orbiter angle of attack, $\alpha_0 = i_{ORB} - 2^\circ + \alpha_w + \Delta i_{ORB}$, deg.
α_w	ALPHAW	carrier wing angle of attack, $\alpha_w = \alpha_c + 2^\circ$, deg.
β_c	BETA	carrier sideslip angle, deg.
β_0	BETA	Orbiter sideslip angle, deg.

NOMENCLATURE (Continued)
Additions to Standard List

<u>Symbol</u>	<u>Plot Symbol</u>	<u>Definition</u>
δC_L	DCL	incremental lift force coefficient (stability axis), DCL
δC_D	DCD	incremental drag force coefficient (stability axis), DCD
δC_m	DCLM	incremental pitching moment coefficient (stability axis), DCLM
δC_Y	DCY	incremental side force coefficient (stability axis), DCY
δC_n	DCLN	incremental yawing moment coefficient (stability axis), DCLN
δC_{ℓ}	DCSL	incremental rolling moment coefficient (stability axis), DCSL
δe	ORBELV	Orbiter elevator deflection angle, ORBELV, deg.
α_I	ALPHAI	nominal value of ALPHAW, ALPHAI ALPHAI = ALPHAW - sting balance correction
CL_T	CL-T	main balance strut tare lift force coefficient, CL-T
CD_T	CD-T	main balance strut tare drag force coefficient, CD-T
C_{mT}	CLM-T	main balance strut tare pitching moment coefficient, CLM-T
C_{YT}	CY-T	main balance strut tare side force coefficient, CY-T
C_{nT}	CLN-T	yawing moment coefficient, CLN-T
$C_{\ell T}$	CSL-T	main balance strut tare rolling moment coefficient, CSL-T

NOMENCLATURE (Concluded)
Additions to Standard List

<u>Symbol</u>	<u>Plot Symbol</u>	<u>Definition</u>
Δi_{ORB}	DIORB	change in Orbiter incidence due to support strut and balance deflections, deg.
δa_{IL}	AIL-IL	carrier left inboard aileron deflection angle, deg.
δa_{IR}	AIL-IR	carrier right inboard aileron deflection angle, deg.
δa_{OL}	AIL-OL	carrier left outboard aileron deflection angle, deg.
δa_{OR}	AIL-OR	carrier right outboard aileron deflection angle, deg.
δa	AILRON	Orbiter aileron deflection angle, deg.
δe_{IB}	ELV-IB	carrier inboard elevator deflection, deg.
δe_{OB}	ELV-OB	carrier outboard elevator deflection, deg.
δe	ELEVON	Orbiter elevon deflection angle, deg.
δ_{BF}	BDFLAP	Orbiter body flap deflection angle, deg.—
δ_{RL}	RUD-L	carrier lower rudder panel deflection angle, deg.
δ_{RU}	RUD-U	carrier upper rudder panel deflection angle, deg.
δ_R	RUDDER	Orbiter rudder deflection angle, deg.
δ_{SB}	SPDBRK	Orbiter speedbrake deflection angle, deg.
δ_{WPP}	STAB	carrier horizontal stabilizer deflection angle, deg.

CONFIGURATIONS INVESTIGATED

The test articles were 0.030-scale representations of the Boeing 747 carrier and Space Shuttle Orbiter vehicles. The carrier and Orbiter were tested both alone and mated. Carrier alone testing included a strut tare and interference investigation which utilized a dummy support strut. The BTWT external balance measured total force and moment data for the mated vehicle and carrier forces and moments for carrier alone testing. Orbiter forces and moments were measured by a six-component internal balance (660) mounted in the Orbiter.

The carrier model (no. AX 1319 I-1) represented the NASA 905 carrier aircraft which is a Boeing 747-100 aircraft with 200 ft.² vertical tip fins on the horizontal tail. Configuration designations used were:

$$K_1 = B_{27.8} M_{26.8}^{25} N_{57}^{58} T_{19} W_{44.1}$$

$$F_{20} = F_{8.1}^{20} F_{8.2}^{20} J_{11.10.2}^{60} J_{13.8.1}^{50} L_{9.8.3}^{70}$$

$B_{27.8}$	fuselage
F_0	all flaps retracted at 0° deflection
$F_{8.1}^{20}$	inboard flaps deflected 20°
$F_{8.2}^{20}$	outboard flaps deflected 20°
$H_{15.1A}$	basic horizontal tail
$H_{15.6}$	horizontal tail with 200 ft. ² vertical tip fins
IS	image strut for support strut tare and interference studies
$J_{11.10.2}^{60}$	mid-span leading edge flaps deflected 60°
$J_{13.8.1}^{50}$	outboard leading edge flaps deflected 50°

CONFIGURATIONS INVESTIGATED (Continued)

L ⁷⁰ _{9.8.3}	inboard leading edge Kruegers deflected 70°
M ₂₅	inboard nacelle struts
M _{26.8}	outboard nacelle struts
N ₅₇	inboard nacelle
N ₅₈	outboard nacelle
S ₁₋₁₂	spoilers
T ₁₉	flap track fairing
V _{9.1}	vertical tail
W _{44.1}	wing

The Orbiter model (no. 45-0) represented the space shuttle Orbiter configuration 140A/B lines. The following configuration designations were used:

ORB = AT₃₉ B₂₆ M₁₆ R₅ V₈ W₁₁₆ E₄₄

AT ₃₈	Orbiter/carrier forward support strut
AT ₃₉	Orbiter/carrier aft support strut
B ₂₆	fuselage
M ₁₆	OMS pods
N ₂₄	MPS nozzles
N ₂₈	OMS nozzles
R ₅	rudder

CONFIGURATIONS INVESTIGATED (Concluded)

TC₅ tail cone fairing

V₈ vertical tail

W₁₁₆ wing

E₄₄ slotted elevon

C₉ canopy

F₈ body flap

TEST FACILITY DESCRIPTION

The Boeing Transonic Wind Tunnel (BTWT) is a continuous flow, closed circuit, single return, atmospheric facility with the following characteristics:

Test Section Flow Parameters		Test Section Dimensions	
Freestream Condition	Range	Description	Value
Mach number	0 thru 1.15	Cross-section (minus corner fillets), ft.	8 x 12
Dynamic pressure, psia	0 thru 6.3	Length, ft.	14.5
Static pressure, psia	15 to 5.4	Area, ft ²	88
Stagnation pressure	atmospheric		
Maximum unit Reynolds number, per foot	4×10^6		
Maximum total temperature, °F	160		

The test section can be operated with either solid or slotted walls. The slotted wall configuration consists of 16 slots which can vary wall porosity from 3.5% to 11%.

Test data acquisition, recording, computations, and display are done by an XDS-9300 computer and Astro data sub-system.

DATA REDUCTION

Aerodynamic forces and moments measured by the external balance were reduced to coefficient form in body and stability axis systems, utilizing carrier reference dimensions:

<u>Symbol</u>	<u>Description</u>	<u>Model Scale</u>	<u>Full Scale</u>
S	747 wing area, ft. ²	4.95	5500
b	747 wing span, in.	70.44	2348
\bar{c}	747 wing mean aerodynamic chord, in.	9.834	327.8
X _{MRP}	747 longitudinal moment reference point, in. X _C	40.197	1339.91
Y _{MRP}	747 lateral moment reference point, in. Y _C	0.0	0.0
Z _{MRP}	747 vertical moment reference point, in. Z _C	5.7225	190.75

Aerodynamic forces and moments measured by the internal balance were reduced to coefficient form in body and stability axis systems utilizing both the carrier reference dimensions (described above) to create one set of data, and Orbiter reference dimensions to create a second set of data. Orbiter reference dimensions are:

<u>Symbol</u>	<u>Description</u>	<u>Model Scale</u>	<u>Full Scale</u>
S	Orbiter wing area, ft. ²	2.42	2690
b	Orbiter wing span, in.	28.10	936.68
\bar{c}	Orbiter wing mean aerodynamic chord, in.	14.244	474.81
X _{MRP}	Orbiter longitudinal moment reference point, in. X _O	33.270	1109.0

DATA REDUCTION (Concluded)

		<u>Model</u> <u>Scale</u>	<u>Full</u> <u>Scale</u>
Y_{MRP}	Orbiter lateral moment reference point, in. Y_0	0.0	0.0
Z_{MRP}	Orbiter vertical moment reference point, in. Z_0	11.25	375.0

Support strut tare and interference corrections were applied to carrier data. These corrections (datasets RGM001-RGM018), were obtained by subtracting image strut in minus image strut out datasets (RGM001-RGM038).

Table IV summarizes the data set notation used for different types of data.

TABLE I

[illegible]

TABLE II.

TEST: BTWT 1431 CA-5		DATA SET/RUN NUMBER COLLATION SUMMARY												DATE: 7-1-75				
DATA SET IDENTIFIER	CONFIGURATION	SCHD.		PARAMETERS/VALUES										MACH NUMBERS				
		α	β	STAB	RUD-U/L	ELV-IB/OB	S1	S2	S3	S4	S5-8	IORB		.15	.30	.50	.60	.70
RGM001	K1 + F0 H15.1A V9.1 + IS	1A	0	-2	0	9/3	0	0	0	0	0	—		31	17	16	15	13
02		2	A	-2	0										18	19	20	21
03		6	A	-2	0									30	25	24	23	22
04	Y	8	A	-2	0	Y									29	28	27	26
05	K1 + F0 V9.1 + IS	1A	0	—	0	—								34	38	37	36	35
06	K1 + F0 H15.1A + IS	2	A	-2	—	0/3									42	41	40	39
07		6	A	-2	—									47	46	45	44	43
08	Y	8	A	-2	—										51	50	49	48
09	K1 + H15.1A F20 + IS	4	A	+1	—										57	56	55	54
10		4	A	+1	—										61	60	59	58
11		6	A	+1	—										65	64	63	62
12	Y	8	A	+1	—	Y									69	68	67	66
13	K1 + F20 V9.1 + IS	1A	0	—	0	—									73	72	71	70
14	K1 + F20 H15.1A V9.1 + IS	1A	0	+1	0	0/3								91	77/78	76	75/90	74
15		-34	A	+1	0													79
16		4.25	A	+1	0										83	82	81/85	80
17		6	A	+1	0										89	88	87	86
Y 18	Y	8	A	+1	0	Y	Y	Y	Y	Y	Y	Y			95	94	93	92
1 7 13 19 25 31 37 43 49 55 61 67 (BETA) 75 76 (ALPHA)																		
C4 CD CLM CY CLN CSL DIORB DCL DCD DCLM DCY DCLN DCSL CLT MACH ALPHA																		
CDT, CLMT, CYT, CLNT, CSLT FOR R SETS, $\alpha = \alpha_w = \Delta = 1A \rightarrow -2 \rightarrow 12, \Delta = 1^0$ COEFFICIENTS * FOR A DATASETS, $\alpha = \alpha_w = \Delta = 1A \rightarrow -2 \rightarrow 12, \Delta = 1^0$. α OR β SCHEDULES. $\beta = \Delta = -12, -10, -8, -6, -4, -3, -2, -1, 0, 1, 2, 3, 4, 6, 8, 10, 12$																		
K1 = W44.1 B27.8 M26.8 N27 T19 + TS #6.2 F20 = F20.1 F20.2 J11.10.2 J13.8.1 L9.8.3																		

F0 = FLAPS RETRACTED 0°; H15.1A = BASIC HORIE. TAIL; H15.6 = HORIE. TAIL W/200 FE² VERT. TIP FINS; V9.1 = VERT. TAIL; AT28 = ORB/CARR. SUPPORT STRUTS
 TC5 = TAIL CONE FAIRING; N28 = OMS NOZZLES; N2A = MRS NOZZLES; IS = IMAGE STRUTS; S = SPOILER DEFLECTIONS; IORB = ORB. INCIDENCE;
 STAB = STAB. DEFLECTION; RUD-U/L = RUDDER DEFLECTION; ELV-IB/OB = ELEV. DEFLECTION

TABLE II. - Continued.

TEST: BTWT 143/ CA-5				DATA SET/RUN NUMBER COLLATION SUMMARY												DATE: 7-1-75									
DATA SET IDENTIFIER		CONFIGURATION	SCHD.		PARAMETERS/VALUES										MACH NUMBERS										
			α	β	STAB	RUP- U/L	ELV- IB/OB	S _{1,2} 11,12	S _{3,4} 9,10	S ₅₋₈	IORB					.15	.3	.5	.6	.7					
RGMO19		K ₁ F ₂₀ V _{9.1} H _{15.1A}	1A	0	+1	0	0/3	0	0	0	—					102	101	100	99	98					
20			4	△	+1	0											106	105	104	103					
21			6	△	+1	0											110	109	108	107					
22		Y	8	△	+1	0	Y										114	113	112	111					
23		K ₁ F ₂₀ V _{9.1}	1A	0	—	0	—										119	118	117	115/116					
24		K ₁ F ₂₀ H _{15.1A}	4	△	+1	—	0/3										123	122	121	120					
25			6	△	+1	—											127	126	125	124					
INVERTED	26	Y	8	△	+1	—											131	130	129	128					
	27	K ₁ F ₀ H _{15.1A}	2	△	+1	—											137	136	135	134					
	28		6	△	+1	—											142	141	140	139					
	29	Y	8	△	+1	—	Y										146	145	144	143					
	30	K ₁ F ₀ V _{9.1}	1A	0	—	0	—										151	150	149	148					
	31	K ₁ F ₀ V _{9.1} H _{15.1A}	1A	0	+1	0	0/3										156	155	154	153					
32			1A	0	-2	0											161	160	159	158					
33			2	△	-2	0											165	164	163	162					
34			6	△	-2	0											170	169	168	167					
35		Y	8	△	-2	0											174	173	172	171					
36		K ₁ F ₀ H _{15.1A}	2	△	-2	—	Y	Y	Y	Y	Y						178	177	176	175					
7		13	19	25	31	37	43	49	55	61	67	73	79												
COEFFICIENTS																				ICLAR 11		ICLAR 12		ICDV	
α OR β																									
SCHEDULES																									

TABLE II. - Continued.

TEST: BTWT 1431 CA-5		DATA SET/RUN NUMBER COLLATION SUMMARY												DATE: 7-1-75				
DATA SET IDENTIFIER	CONFIGURATION	SCHD.		PARAMETERS/VALUES										MACH NUMBERS				
		α	β	STAB	RUD- U/L	ELV- FB/OB	S _{1,2} 11,12	S _{3,4} 9,10	S ₅₋₈	IORB				.15	.3	.5	.6	.7
REM037	K1 F0 H15.1A	6	Δ	-2	—	0/3	0	0	0	—				183	182	181	180	179
38	Y	8	Δ	-2	—	0/3									187	186	185	184
39	K1 F0 Y9.1	Δ	0	—	0	—								194	193	192	191	189
40	K1 F0 Y9.1 H15.1A	Δ	0	-2		0/3								202	201	200	199	198
41	Y	6	Δ	-2										207	206	205	204	203
42	K1 F0 Y9.1 H15.6	Δ	0	-2										212	211	210	209	208
43		6	Δ	-2										217	216	215	214	213
44		Δ	0	+1				Y	Y					222	221	220	219	218
45		Δ	0	+1				45	20							224	223	
46		Δ	+5	+1		Y										226	225	
47		Δ	0	+1		10/13											227	
48		Δ	0	+1	Y	-10/7											228	
49	Y	Δ	0	+1	15/15	0/3											229	
50	K1 F0 Y9.1 H15.6 AT ₃₈ AT ₃₉	6	Δ	+1	15/15	0/3										233	232	
51		6	Δ	+1	0	0/3										236	235	234
52	Y	Δ	0	+1	0	0/3									240	239	238	237
53	K1 F0 Y9.1 H15.6 AT ₃₈ AT ₃₉	Δ	0	+1	0	0/3	Y	Y	Y						244	243	242	241
54	K1 F0 Y9.1 H15.6	Δ	0	-1.9	0	0/3	0	45	20	Y						246	245	
		13	19	25	31	37	43	49	55	61	67	73	76					
		COEFFICIENTS												ICVAR 11 ICVAR 12 ICVAR 13				
		α OR β SCHEDULES																

INVERTED

40

TEST RUN NUMBERS

TABLE II. - Continued.

TEST: BTWT 1431 CA-5				DATA SET/RUN NUMBER COLLATION SUMMARY										DATE: 7-1-75							
DATA SET IDENTIFIER	CONFIGURATION	SCHD.		PARAMETERS/VALUES										MACH NUMBERS							
		α	β	STAB	RUB- U/L	ELV- EB/DB	S1,2 11,12	S2,4 9,10	S5-8	IORB				.15	.3	.5	.6	.7			
RGMO55	K1 F0 H15.1 A	6	A	-1.9	—	0/3	0	0	0	—							251	250	249	248	247
56	K1 F20 H15.1 A	6	A	+1	—	0/3													255	254	253
57	K1 F20 H15.1A V9.1	6	A	+1	0	0/3												259	258	257	256
58	Y	A	0	+1	0	0/3											264	263	262/265	261	260
59	K1 F20 H15.6 V9.1	A	0	+1	0	0/3											269		268	267	266
60		6	A	+1	0	0/3	Y	Y	Y										272	271	270
61		A	0	+1	0	0/3	45	45	45										273		
62	Y	A	0	+1	0	10/13					Y								274		
63	K1 F20 H15.6 V9.1 + ORB	A	0	+1	0	10/13				9.7									277	278	279
64	+ TS5 + AT38.1	A	0	+1	0	10/13													282	281	280
65		A	0	+1	0	0/3														284	283
66		A	0	+1	0	0/3													285		
67		6	A	+1	0	0/3													288	287	286
68		A	0	-2	0	0/3													291	290	289
69		6	A	+1	10/10	0/3	Y		Y										296	295	294
70		A	0	+1	0	0/3	0	Y	20										299	298	297
71		A	0	+1	0	0/3	0	0	0										302	301	300
Y 72	Y	8	A	+1	0	0/3	0	0	0	Y							306		305	304	303

1319253137434955616773

COEFFICIENTS

α OR β

SCHEDULES

ORB = W₁₁₆ B₂₆ V₈ R₅ M₁₆ AT₃₉ E₄₄ + TS_{ORB}

TABLE II. - Continued.

TEST: BTWT 1431 CA-5				DATA SET/RUN NUMBER COLLATION SUMMARY										DATE: 7-1-75				
DATA SET IDENTIFIER	CONFIGURATION	SCHD.		PARAMETERS/VALUES										MACH NUMBERS				
		α	β	STAB	RUP- U/L	ELV- TB/DB	S _{1,2} U/L	S _{3,4} U/L	S ₅₋₈	IORE	ORB ELV			.5	.3	.5	.6	.7
REM073	K1F20H15.6V9.1 + ORB + TC5 + AT38.1	6	A	+1	0	0/3	0	0	0	9.7	—			310		309	308	307
74	K1F20H15.1AV9.1 + ORB + TC5 + AT38.1	A	0	+1	0	0/3	0	0	0	9.7						313	312	311
75		A	0	+1	0	0/3	45	45	45	9.7						316	315	314
76	Y	6	A	+1	0	0/3	45	45	45	9.7						319	318	317
77	K1F20V9.1 + ORB + TC5 + AT38.1	A	0	—	0	—	45	45	45	9.7					323	322	321	320
78	K1F20H15.1A + ORB + TC5 + AT38.1	6	A	+1	—	0/3	45	45	45	9.7				327		326	325	324
79	K1F20H15.6V9.1 + ORB + TC5 + AT38.2	6	A	+1	0	0/3	45	45	45	7.85						330	329	328
80	Y	A	0	+1	0	0/3	45	45	45	7.85						333 335	332 334	331
81	K1F0H15.6V9.1 + ORB + TC5 + AT38.2	A	0	+1	0	0/3	0	45	20	7.85				340	339	338	337	336
82		2	A	+1	0	0/3	0	45	20	7.85				345	344	343	342	341
83		6	A	+1	0	0/3	0	45	20	7.85				350	349	348	347	346
84		A	0	-2	0	0/3	0	45	20	7.85					354	353	352	351
85		A	0	+1	0	10/13	0	45	20	7.85					358	357	356	355
86	Y	6	A	+1	10/10	0/3	0	45	20	7.85	Y				362	361	360	359
87	K1F0H15.6V9.1 + ORB + TC5 + AT38.2	A	0	+1	0/0	0/3	0	45	20	7.85	5					364	363	
88		6	A	+1	0/0	0/3	0	45	20	7.85	5					366	365	
89		6	A	+1	0	0/3	0	0	0	7.85	0				370	369	368	367
Y 90	Y	A	0	+1	0	0/3	0	0	0	7.85	0				374	373	372	371
7 13 19 25 31 37 43 49 55 61 67 73 79																		
COEFFICIENTS: IC, AR 11 IC, AR 12 ICV																		
α OR β SCHEDULES																		

TEST RUN NUMBERS

TABLE II. - Continued.

TEST: BTWT 1431 CA-5				DATA SET/RUN NUMBER COLLATION SUMMARY										DATE: 7-1-75					
DATA SET IDENTIFIER	CONFIGURATION	SCHD.		PARAMETERS/VALUES										MACH NUMBERS					
		α	β	STAB	RUP- U/L	ELV- B/CB	S1,2 11,12	S3,4 13,14	S5-8	IORB				.15	.3	.5	.6	.7	
RGMO 91	K1F0H15.6Vg.1 + ORB + N28 + N24 + AT38.2	Δ	0	-2	0	0/3	0	45	20	7.85						378	377	376	375
92		Δ	0	+1	0	0/3	0	45	20	7.85						382	381	380	379
93		6	Δ	+1	0	0/3	0	45	20	7.85						386	385	384	383
94		6	Δ	+1	10/10	0/3	0	45	20	7.85						390	389	388	387
95	Y	Δ	0	+1	0/0	10/13	0	45	20	7.85						394	393	392	391
96	K1F0H15.6Vg.1 + ORB + TC5 + AT38.2	Δ	0	+1	0/0	0/0	0	45	20	9.7						398	397	396	395
97	Y	6	Δ	+1	0/0	0/0	0	45	20	9.7						402	401	400	399
98	K1F0Vg.1 + ORB + TC5 + AT38.2A	Δ	0	—	0/0	—	0	45	20	7.85				407	406	405	404	403	
99	K1F0Vg.1 + ORB + AT38.2A + N28 + N24	Δ	0	—	0/0	—	0	45	20	7.85					411	410	409	408	
100	K1F0H15.1A + ORB + AT38.2A + N28 + N24	6	Δ	-1	—	0/0	0	45	20	7.85					415	414	413	412	
101	K1F0H15.1A + ORB + TC5 + AT38.2A	2	Δ	-1	—	0/0	0	45	20	7.85					419	418	417	416	
102		6	Δ	-1	—	0/0	0	45	20	7.85				424	423	422	421	420	
103	Y	6	Δ	+1	—	0/0	0	45	20	7.85				429	428	427	426	425	
104	K1F0H15.1A + ORB + TC5 + AT38.3	2	Δ	-2	—	0/3	0	0	0	4.0					435	434	433	432	
105		6	Δ	-2	—	0/3	0	0	0	4.0				440	439	438	437	436	
106	Y	8	Δ	-2	—	0/3	0	0	0	4.0					444	443	442	441	
107	K1F0Vg.1 + ORB + TC5 + AT29.3	Δ	0	—	0/0	—	0	0	0	4.0				449	448	447	446	445	
108	K1F0H15.1AVg.1 + ORB + TC5 + AT38.3	Δ	0	-3.2	—	0/3	0	0	0	4.0					453	452	451	450	
7 13 19 25 31 37 43 49 55 61 67 73 79																			
COEFFICIENT																			
IDVAR 11 IDVAR 12 IDVAR 13																			
α OR β SCHEDULES																			

TABLE II. - Continued.

TEST: BTWT 1431 CA-5				DATA SET/RUN NUMBER COLLATION SUMMARY										DATE: 7-1-75					
DATA SET IDENTIFIER	CONFIGURATION	SCHD.		PARAMETERS/VALUES										MACH NUMBERS					
		α	β	STAB	RUD- U/L	ELV- TB/OB	S1,2 11,12	S3,4 9,10	S5-8	IORB					.15	.3	.5	.6	.7
RGM/09	K1FoH15.1AVq.1+ORB+TC5+AT _{38.3}	2	Δ	-3.2	0	0/3	0	0	0	4.0						457	456	455	454
110		6	Δ	-3.2	0	0/3										461	460	459	458
111	Y	8	Δ	-3.2	0	0/3										465	464	463	462
112	K1FoH15.6Vq.1+ORB+TC5+AT _{38.3}	Δ	0	-3.2	0	0/3									470	469	468	467	466
113		2	Δ	-3.2	0	0/3									475	474	473	472	471
114		6	Δ	-3.2	0	0/3									484	479	478	477	476
115		8	Δ	-3.2	0	0/3										483	482	481	480
116		Δ	0	+1	0	0/3										488	487	486	485
117		Δ	0	-2	0	0/3									493	492	491	490	489
118		6	Δ	-2	0	0/3									498	497	496	495	494
119		Δ	0	-2	0	-10/7										502	501	500	499
120		Δ	0	-2	0	10/13										506	505	504	503
121		6	Δ	-2	10/10	0/3										509	510	508	507
122		2	Δ	-2	10/10	0/3										514	513	512	511
123		8	Δ	-2	10/10	0/3										518	517	516	515
124	Y	6	Δ	-2	10/10	0/3										525	524	523	522
125	K1FoH15.1AVq.1+ORB+TC5+AT _{39.3}	Δ	0	-2	0/0	0/3										529	528	527	526
126	K1FoH15.6Vq.1+ORB+AT _{38.3} +N28+N24	Δ	0	-2	0/0	0/3	Y	Y	Y	Y						533	532	531	530
1 7 13 19 25 31 37 43 49 55 61 67 73 76																			
COEFFICIENTS																			
IDVAR (1) IDVAR (2) IDCV																			
α OR β																			
SCHEDULES																			

TABLE II. - Concluded.

[illegible]

TABLE III. MODEL DIMENSIONAL DATA

a. Carrier Model

MODEL COMPONENT: B_{27.8}

GENERAL DESCRIPTION: BODY, 747 Project with A.P.V. exit.

MODEL SCALE: 0.03

DRAWING NUMBER: 65-69716

DIMENSIONS:	<u>FULL SCALE</u>	<u>MODEL SCALE</u>
Length, in.	<u>2702</u>	<u>81.06</u>
Max. Width, in.	<u>255</u>	<u>7.65</u>
Max. Depth		
Fineness Ratio		
Area		
Max. Cross-Sectional	<u> </u>	<u> </u>
Planform	<u> </u>	<u> </u>
Wetted, ft ²	<u>424</u>	<u>.3816</u>
Base	<u> </u>	<u> </u>

TABLE IIIa.- Continued.

MODEL DIMENSIONAL DATA

MODEL COMPONENT F₀

GENERAL DESCRIPTION Clean Wing

Flaps up

DRAWING NUMBER

DIMENSIONS	FULL SCALE	MODEL SCALE
Area		
Span (equivalent)		
Inb'd equivalent chord		
Outb'd equivalent chord		
Ratio movable surface chord/ total surface chord		
At Inb'd equiv. chord		
At Outb'd equiv. chord		
Sweep Back Angles, degrees		
Leading Edge		
Trailing Edge		
Hingeline		
Area Moment (Normal to hinge line)		

TABLE IIIa.- Continued.

MODEL DIMENSIONAL DATA

MODEL COMPONENT $F_{8.1}^{20}$

GENERAL DESCRIPTION Flap inboard
deflected 20°

DRAWING NUMBER 5.0. 1319-4 thru - 10 & -38

DIMENSIONS	FULL SCALE	MODEL SCALE
Area		
Span (equivalent)		WBL 3.854 to WBL 13.351
Inb'd equivalent chord		
Outb'd equivalent chord		
Ratio movable surface chord/ total surface chord		
At Inb'd equiv. chord		
At Outb'd equiv. chord		
Sweep Back Angles, degrees		
Leading Edge		
Trailing Edge		
Hingeline		
Area Moment (Normal to hinge line)		

TABLE IIIa. - Continued.

MODEL DIMENSIONAL DATA

MODEL COMPONENT : $F_{8.2}^{20}$

GENERAL DESCRIPTION : Flap, Outbd deflected 20°

DRAWING NUMBER : 5.0 1319-20 thru -25 & -42

DIMENSIONS	FULL SCALE	MODEL SCALE
Area		
Span (equivalent)		WBL 15.450 to WBL 24.660.
Inb'd equivalent chord		
Outb'd equivalent chord		
Ratio movable surface chord/ total surface chord		
At Inb'd equiv. chord		
At Outb'd equiv. chord		
Sweep Back Angles, degrees		
Leading Edge		
Trailing Edge		
Hingeline		
Area Moment (Normal to hinge line)		

TABLE IIIa. - Continued.

MODEL COMPONENT: Horizontal Tail - H15.1AGENERAL DESCRIPTION: Swept Horizontal Tail With
Planform Radius Fillet at L.E. - Body Intersection.MODEL SCALE= 0.03DRAWING NUMBER: 65-66630, 69-49180, 1007-477

<u>DIMENSIONS:</u>	<u>Full Scale</u>	<u>Model Scale</u>
<u>EXPOSED DATA (one side)</u>		
Area- ft^2	<u>736</u>	<u>0.6625</u>
Span- in.	<u>436.5</u>	<u>13.095</u>
Aspect Ratio	<u> </u>	<u> </u>
Taper Ratio	<u> </u>	<u> </u>
Dihedral Angle-deg.	<u>7</u>	<u>7</u>
Incidence Angle-deg.	<u> </u>	<u> </u>
Sweep Back Angle-deg. L. E.	<u>43.08</u>	<u>43.08</u>
Chords-in.		
Root	<u>388</u>	<u>11.64</u>
Tip	<u>97</u>	<u>2.91</u>
MAC	<u> </u>	<u> </u>
Apex Location-in.	<u> </u>	<u> </u>
X_o	<u> </u>	<u> </u>
Y_o	<u> </u>	<u> </u>
Z_o	<u> </u>	<u> </u>
.25 MAC Location-in.		
X_c Station	<u>2564</u>	<u>76.920</u>
Y_o	<u> </u>	<u> </u>
Z_o	<u> </u>	<u> </u>

TABLE IIIa. - Continued.

MODEL COMPONENT: Horizontal Tail H15.6GENERAL DESCRIPTION: Horizontal tail with vertical finson each tip at body B.L. 12.82MODEL SCALE: 0.03

DRAWING NUMBER: _____

DIMENSIONS:Full ScaleModel ScaleExposed Data (one side)Area - ft²2000.18

Span - in.

Aspect Ratio

Taper Ratio

Dihedral Angle-deg.

Incidence Angle-deg.

Sweep Back Angle-deg.

Chords - in.

TABLE IIIa. - Continued.

MODEL DIMENSIONAL DATA

MODEL COMPONENT : 60
J11.10.2GENERAL DESCRIPTION : Middle L.E. Slat deflected 60°Model Scale: 0.03DRAWING NUMBER 5.0.1319-26, & -44

DIMENSIONS :

FULL SCALE

MODEL SCALE

Area

From WBL 15.389 to MAC Strut

Span (equivalent), in.

43413.022

Inb'd equivalent chord

Chord

31.6.948Ratio movable surface chord/
total surface chord

At Inb'd equiv. chord

At Outb'd equiv. chord

Sweep Back Angles, degrees

Leading Edge

Trailing Edge

Hingeline

Area Moment (Normal to hinge line)

TABLE IIIa.- Continued.

MODEL DIMENSIONAL DATA

MODEL COMPONENT J⁵⁰_{13.8.1}

GENERAL DESCRIPTION Outboard L.E. Slat deflected 50°

Model Scale: 0.03

DRAWING NUMBER 5.0 1319-26 & -44

DIMENSIONS	FULL SCALE	MODEL SCALE
Area		
(From WBL 26.374)		
Span (equivalent), in	360.5	10.814
Inb'd equivalent chord		
Outb'd equivalent chord, in	24.1	.722
Ratio movable surface chord/ total surface chord		
At Inb'd equiv. chord		
At Outb'd equiv. chord		
Sweep Back Angles, degrees		
Leading Edge		
Trailing Edge		
Hingeline		
Area Moment (Normal to hinge line)		

TABLE IIIa: - Continued.

MODEL COMPONENT: ⁷⁰L_{9.8.3}

GENERAL DESCRIPTION: Inboard Leading edge Krueger flap, deflected 70°

Model Scale: 0.03

Drawing NUMBER: 5.0. 1319-26 -44

DIMENSIONS:	<u>Full Scale</u>	<u>Model Scale</u>
Span from WBL 7.322 to Nacelle Strut, in	<u>304.8</u>	<u>9.144</u>
Inb'd equivalent chord, in	<u>315.3</u>	<u>9.46</u>

TABLE IIIa. - Continued.

MODEL DIMENSIONAL DATA

MODEL COMPONENT: M₂₅GENERAL DESCRIPTION: Inboard 747, J_{T90} Nacelle
strutModel Scale: 0.03

DRAWING NUMBER _____

DIMENSIONS :	FULL SCALE	MODEL SCALE
Wing B.L. of nacelle \bar{c} , in.	<u>470.0</u>	<u>14.100</u>
Cont angle, deg. inboard	<u>2</u>	<u>2</u>

TABLE IIIa. - Continued.

MODEL COMPONENT: M_{26.8}

GENERAL DESCRIPTION: Outboard 747, & J₁T9D Nacelle

Strut

Model Scale: 0.03

DRAWING NUMBER 937-590

TABLE IIIa. - Continued.

MODEL DIMENSIONAL DATA

MODEL COMPONENT: N₅₇

GENERAL DESCRIPTION Inboard Fan Cowl and Primary

747 Nacelle, flow thru type

Model Scale: 0.03

DRAWING NUMBER 5.0 1007-96, 97

TABLE IIIa. - Continued.
MODEL DIMENSIONAL DATA

MODEL COMPONENT: N₅₈

GENERAL DESCRIPTION: Outboard fan cowl and primary

747 Nacelle, flow thru type

Model Scale: 0.03

DRAWING NUMBER 5.0. 1.007-96, -97

TABLE IIIa. - Continued.

MODEL COMPONENT: SPOILERS - S_{1-12}

GENERAL DESCRIPTION: Multi-panel flight spoilers. Four outboard and two inboard spoilers per side. Subscript denotes spoiler panel S_1 is the most outboard L.H. panel and S_{12} is most outboard R.H. panel.

747 MODEL SCALE: 0.030 MODEL: 1065

DRAWING NO.: 65-71450, S. O. 1065-51, -59, -81, -173

DIMENSIONS: (one panel)	<u>FULL SCALE</u>	<u>MODEL SCALE</u>
Outboard S_{1-4} and S_{9-12} (Ft^2)	<u>21.48</u>	<u>0.0193</u>
Span (equivalent), in.	<u>6.25</u>	<u>0.1875</u>
Chord, in.	<u>3.44</u>	<u>0.1032</u>
Inboard S_{5-6} and S_{7-8} (Ft^2)	<u>35.31</u>	<u>0.0318</u>
Span (equivalent), in.	<u>7.50</u>	<u>0.225</u>
Chord, in.	<u>4.71</u>	<u>0.1413</u>

TABLE IIIa. - Continued.

MODEL COMPONENT: T₁₉GENERAL DESCRIPTION: Flap track fairings,4 on each side.Model Scale: 0.03DRAWING NUMBER 5.0. 1007-403

DIMENSIONS:	<u>Full Scale</u>	<u>Model Scale</u>
WBL of Track no. 1, in.	<u>235.3</u>	<u>7.06</u>
WBL of Track no. 2, in.	<u>353.</u>	<u>10.59</u>
WBL of Track no. 3, in.	<u>652.</u>	<u>19.56</u>
WBL of Track no. 4, in.	<u>743.6</u>	<u>22.31</u>
Distance from wing trailing edge to track trailing edge, in.	<u>50.</u>	<u>1.5</u>

TABLE IIIa. - Continued.

MODEL COMPONENT: V_{9.1}GENERAL DESCRIPTION: Swept Vertical TailModel Scale: 0.03DRAWING NUMBER: 65-6.9716; 1007-26, -610; 937-319

DIMENSIONS:	<u>FULL SCALE</u>	<u>MODEL SCALE</u>
TOTAL DATA		
Area (Theo)- Ft ²	<u>830</u>	<u>.7470</u>
Planform	<u> </u>	<u> </u>
Span (Theo) - In.	<u>386.5</u>	<u>11.595</u>
Aspect Ratio	<u> </u>	<u> </u>
Rate of Taper	<u> </u>	<u> </u>
Taper Ratio	<u> </u>	<u> </u>
Sweep-Back Angles, Degrees	<u> </u>	<u> </u>
Leading Edge	<u>50.12</u>	<u>50.12</u>
Trailing Edge	<u> </u>	<u> </u>
0.25 Element Line	<u> </u>	<u> </u>
Chords:	<u> </u>	<u> </u>
Root (Theo) WP-in.	<u>461.67</u>	<u>13.85</u>
Tip (Theo) WP-in.	<u>157</u>	<u>4.71</u>
MAC	<u> </u>	<u> </u>
Fus. Sta. of .25 MAC	<u>2529.6</u>	<u>75.888</u>
W. P. of .25 MAC	<u> </u>	<u> </u>
B.L. of .25 MAC	<u> </u>	<u> </u>
Airfoil Section	<u> </u>	<u> </u>
Leading Wedge Angle-Deg.	<u> </u>	<u> </u>
Trailing Wedge Angle-Deg.	<u> </u>	<u> </u>
Leading Edge Radius	<u> </u>	<u> </u>
Void Area	<u> </u>	<u> </u>
Blanketed Area	<u> </u>	<u> </u>

TABLE IIIa. - Concluded.

MODEL COMPONENT: WING - W_{44.1}GENERAL DESCRIPTION: Swept 747 WingMODEL SCALE: 0.03DWG. NO.: 65-89585DIMENSIONS:FULL SCALEMODEL SCALE

OTAL

Area (Theo.) Ft²

5500

4.95

Planform

2348

70.44

Span (Theo. In.)

6.96

6.96

Aspect Ratio

Rate of Taper

Taper Ratio

7

7

Dihedral Angle, degrees

Incidence Angle, degrees

Aerodynamic Twist, degrees

Swept Back Angles, degrees

Leading Edge

Trailing Edge

0.25 Element Line

Chords:

Root (Theo) B.P.O.O.

Tip, (Theo) B.P.

MAC

327.8

9.834

Fus. Sta. of .25 MAC

1339.91

40.197

W. P. of .25 MAC

190.75

5.7225

B. L. of .25 MAC

TABLE III. MODEL DIMENSIONAL DATA

b. Orbiter Model

MODEL COMPONENT: ATTACH STRUCTURE - AT₃₈

GENERAL DESCRIPTION: Orbiter forward attachment struts.

MODEL SCALE: 0.030

DRAWING NO.: Boeing 1319-43

DIMENSIONS:

HEIGHT OF ACTUATOR RED TIP ABOVE
STRUT UPPER JUNCTION, IN.

<u>SYMBOL</u>	<u>FULL SCALE</u>	<u>MODEL SCALE</u>
AT ₃₈	15.5	0.465
AT _{38.1.}	91.67	2.75
AT _{38.2}	75.00	2.25
AT _{38.2A}	75.0	2.25
AT _{38.3}	ROD REMOVED	ROD REMOVED

TABLE IIIb. (Continued)

MODEL COMPONENT: ATTACH STRUCTURE - AT₃₉

GENERAL DESCRIPTION: Orbiter aft attachment, pitch adjustable from
0 to 10 deg.

MODEL SCALE: 0.030

DRAWING NO.: Boeing 50 1319-37.

DIMENSIONS:	<u>FULL SCALE</u>	<u>MODEL SCALE</u>
Pivot location:		
In., X_C	400.0	12.0
In., Z_C	160.7	4.821
Equivalent Span: (At 0 deg iorb)		
Centerline orbiter, in.	521.0	15.63

TABLE IIIb. (Continued)

MODEL COMPONENT : BODY - B₂₆GENERAL DESCRIPTION : Configuration 140A/B orbiter fuselage.NOTE: B₂₆ is identical to B₂₄ except underside of fuselage has been
refaired to accept W₁₁₆.MODEL SCALE: 0.030DRAWING NUMBER : VL70-000143B -000200, -000205, -006089, -000145,
-000140A, -000140B

DIMENSIONS :	FULL SCALE	MODEL SCALE
Length (OML: Fwd Sta. $X_o=235$) In.	1293.3	38.799
Length (IML: Fwd Sta. $X_o=238$) In.	1290.3	38.709
Max Width (@ $X_o = 1528.3$) In.	264.00	7.920
Max Depth (@ $X_o = 1464$) In.	250.00	7.500
Fineness Ratio	0.264	0.264
Area - Ft ²		
Max. Cross-Sectional	340.88	0.3068
Planform		
Wetted		
Base		

TABLE IIIb. (Continued)

MODEL COMPONENT : OMS POD - M16

GENERAL DESCRIPTION : Configuration 140C orbiter OMS pod - short pod.

MODEL SCALE: 0.030

DRAWING NUMBER : VL70-008401, -008410

DIMENSIONS :	FULL SCALE	MODEL SCALE
Length (OMS Fwd Sta. $X_0=1310.5$). In.	<u>258.50</u>	<u>7.755</u>
Max Width (@ $X_0 = 1511$), In.	<u>136.8</u>	<u>4.104</u>
Max Depth (@ $X = 1511$), In.	<u>74.70</u>	<u>2.241</u>
Fineness Ratio	<u>2.484</u>	<u>2.484</u>
Area - Ft ²		
Max. Cross-Sectional	<u>58.864</u>	<u>0.053</u>
Planform		
Wetted		
Base		

TABLE IIIb. (Continued)

MODEL COMPONENT: MPS NOZZLES - N₂₄GENERAL DESCRIPTION: Configuration 140A/B Orbiter MPS NozzlesMODEL SCALE: 0.030MODEL DWG: SS-A00147, Release 12DRAWING NUMBER: VL70-005030A, -000140A

DIMENSIONS:

FULL SCALEMODEL SCALE

Length - In.

Gimbal Point to Exit Plane

157.04.71

Throat to Exit Plane

99.22.976

Diameter - In.

Exit

91.0002.73

Throat

Inlet

Area - ft²

Exit

45.1660.0407

Throat

Gimbal Point (Station) - In.

Upper Nozzle

X

1445.0043.35

Y

0.00.0

Z

443.0013.29

Lower Nozzles

X

1468.17044.045

Y

+ 53.000 +1.59

Z

342.64010.279

Null Position - Deg.

Upper Nozzle

Pitch

1616

Yaw

00

Lower Nozzle

Pitch

1010

Yaw

3.53.5

TABLE IIIb. (Continued)

MODEL COMPONENT: OMS NOZZLES - N28GENERAL DESCRIPTION: Configuration 140A/B Orbiter OMS NozzlesMODEL SCALE: 0.030DRAWING NUMBER: VL70-000140A (Location). SS-A00106, Release 5. (Contour)

DIMENSIONS:	<u>FULL SCALE</u>	<u>MODEL SCALE</u>
Length - In.		
Gimbal Point to Exit Plane		
Throat to Exit Plane		
Diameter - In.		
Exit		
Throat		
Inlet		
Area - ft ²		
Exit Max. Cross-Sectional (1 nozzle)		
Throat		
Gimbal Point (Station) - In.		
Left Upper Nozzle		
X _o	<u>1518.0</u>	<u>45.54</u>
Y _o	<u>-88.0</u>	<u>- 2.64</u>
Z _o	<u>492.0</u>	<u>14.76</u>
Right Lower Nozzles		
X _o	<u>1518.0</u>	<u>45.54</u>
Y _o	<u>88.0</u>	<u>2.64</u>
Z _o	<u>492.0</u>	<u>14.76</u>
Null Position - Deg.		
Left Upper Nozzle		
Pitch	<u>15°49'</u>	<u>15°49'</u>
Yaw	<u>12°17'</u>	<u>12°17'</u>
Right Lower Nozzle		
Pitch	<u>15°49'</u>	<u>15°49'</u>
Yaw	<u>12°17'</u>	<u>12°17'</u>

TABLE IIIb. (Continued)

MODEL COMPONENT: RUDDER - R₅GENERAL DESCRIPTION: Configuration 140C orbiter rudder (identical to
Configuration 140A/B rudder)MODEL SCALE: 0.030DRAWING NUMBER: VL70-000146B. -000095

<u>DIMENSIONS:</u>	<u>FULL SCALE</u>	<u>MODEL SCALE</u>
Area - Ft ²	<u>100.15</u>	<u>0.090</u>
Span (equivalent), In.	<u>201.00</u>	<u>6.030</u>
Inb'd equivalent chord, In.	<u>91.585</u>	<u>2.748</u>
Outb'd equivalent chord, In.	<u>50.833</u>	<u>1.525</u>
Ratio movable surface chord/ total surface chord		
At Inb'd equiv. chord	<u>0.400</u>	<u>0.400</u>
At Outb'd equiv. chord	<u>0.400</u>	<u>0.400</u>
Sweep Back Angles, degrees		
Leading Edge	<u>34.83</u>	<u>34.83</u>
Tailing Edge	<u>26.25</u>	<u>26.25</u>
Hingeline	<u>34.83</u>	<u>34.83</u>
Area Moment (Product of larea & c) (Normal to hingeline), Ft. ³	<u>610.92</u>	<u>0.165</u>
Mean Aerodynamic Chord, In.	<u>73.2</u>	<u>2.196</u>

TABLE IIIb. (Continued)

MODEL COMPONENT: TAIL CONE - TC₅GENERAL DESCRIPTION: Fairing mounted on orbiter fuselage base for ferry missions.MODEL SCALE: 0.030DRAWING NUMBER: Boeing Drawing 1319-71.

DIMENSIONS :	FULL SCALE	MODEL SCALE
Length, in.	<u>445.83</u>	<u>13.375</u>
Max Width, in.	<u>303.33</u>	<u>9.10</u>
Max Height, in.	<u>265.00</u>	<u>7.95</u>
Fineness Ratio	<u></u>	<u></u>
Area - Ft ²	<u></u>	<u></u>
Projected frontal area	<u>324.105</u>	<u>0.2917</u>
Max. Cross-Sectional	<u></u>	<u></u>
Planform	<u></u>	<u></u>
Wetted	<u></u>	<u></u>
Base	<u></u>	<u></u>

TABLE IIIb. (Continued)

MODEL COMPONENT: VERTICAL - V₈GENERAL DESCRIPTION: Configuration 140C orbiter vertical tail (identical to configuration 140A/B vertical tail).MODEL SCALE: 0.030DRAWING NUMBER: VL70-000140C -000146BDIMENSIONS: FULL SCALE MODEL SCALE

TOTAL DATA

Area (Theo) - Ft ²		
Planform	413.243	0.372
Span (Theo) - In.	315.72	9.472
Aspect Ratio	1.675	1.675
Rate of Taper	0.507	0.507
Taper Ratio	0.404	0.404
Sweep-Back Angles, Degrees.		
Leading Edge	45.00	45.00
Trailing Edge	26.25	26.25
0.25 Element Line	41.13	41.13
Chords:		
Root (Theo) WP	268.50	8.055
Tip (Theo) WP	108.47	3.254
MAC	199.81	5.994
Fus. Sta. of .25 MAC	1463.35	43.901
W.P. of .25 MAC	635.52	19.066
B.L. of .25 MAC	0.00	0.00
Airfoil Section		
Leading Wedge Angle - Deg.	10.00	10.00
Trailing Wedge Angle - Deg.	14.92	14.92
Leading Edge Radius	2.00	0.060
Void Area - Ft ²	13.17	0.
Blanketed Area - Ft ²	0.0	0.0

TABLE IIIb. (Continued)

MODEL COMPONENT: WING-W 116GENERAL DESCRIPTION: Configuration 4NOTE: Identical to W114 except airfoil thickness. Dihedral angle is along
trailing edge of wing.MODEL SCALE: 0.030

TEST NO.

DWG. NO. VL70-000140A, -000200DIMENSIONS:FULL-SCALEMODEL SCALETOTAL DATAArea (Theo.) Ft^2

Planform

2690.00

2.421

Span (Theo) In.

936.68

28.10

Aspect Ratio

2.265

2.265

Rate of Taper

1.177

1.177

Taper Ratio

0.200

0.200

Dihedral Angle, degrees

3.500

3.500

Incidence Angle, degrees

0.500

0.500

Aerodynamic Twist, degrees

3.000

3.000

Sweep Back Angles, degrees

Leading Edge

45.000

45.000

Trailing Edge

- 10.056

- 10.056

0.25 Element Line

35.209

35.209

Chords:

Root (Theo) B.P.O.O.

689.24

20.677

Tip, (Theo) B.P.

137.85

4.136

MAC

474.81

14.244

Fus. Sta. of .25 MAC

1136.83

34.105

W.P. of .25 MAC

290.58

8.717

B.L. of .25 MAC

182.13

5.464

EXPOSED DATAArea (Theo) Ft^2

1751.50

1.576

Span, (Theo) In. BP108

720.68

21.620

Aspect Ratio

2.059

2.059

Taper Ratio

0.245

0.245

Chords

Root BP108

562.09

16.863

Tip $1.00 \frac{b}{2}$

137.85

4.136

MAC

392.83

11.785

Fus. Sta. of .25 MAC

1185.98

35.579

W.P. of .25 MAC

294.30

8.829

B.L. of .25 MAC

251.77

7.553

Airfoil Section (Rockwell Mod NASA)
XXXX-64Root $\frac{b}{2} =$

0.113

0.113

Tip $\frac{b}{2} =$

0.120

0.120

Data for (1) of (2) Sides

Leading Edge Cuff
Planform Area Ft^2

113.18

0.102

Leading Edge Intersects Fus M. L. @ Sta

500.00

15.00

Leading Edge Intersects Wing @ Sta

1024.00

30.72

TABLE IIIb. (Continued)

MODEL COMPONENT: SLOTTED ELEVON (6 -INCH GAP) - E₁₁₄GENERAL DESCRIPTION: Configuration 140A/B Orbiter elevon.NOTE: E₁₁₄ is a slotted version of E₂₆. Data are for one side.MODEL SCALE: 0.030DRAWING NUMBER: VL70-000200. -006089. -006092

<u>DIMENSIONS:</u>	<u>FULL SCALE</u>	<u>MODEL SCALE</u>
Area - Ft ²	<u>210.0</u>	<u>0.189</u>
Span (equivalent) In.	<u>349.2</u>	<u>10.476</u>
Inb'd equivalent chord In.	<u>118.004</u>	<u>3.540</u>
Outb'd equivalent chord In.	<u>55.192</u>	<u>1.656</u>
Ratio movable surface chord/ total surface chord		
At Inb'd equiv. chord	<u>0.2096</u>	<u>0.2096</u>
At Outb'd equiv. chord	<u>0.4004</u>	<u>0.4004</u>
Sweep Back Angles, degrees		
Leading Edge	<u>0.00</u>	<u>0.00</u>
Tailing Edge	<u>- 10.056</u>	<u>- 10.056</u>
Hingeline	<u>0.00</u>	<u>0.00</u>
Area Moment (Product of area and \bar{c}) (Normal to hingeline) Ft ³	<u>1587.25</u>	<u>0.043</u>
Mean Aerodynamic Chord, In.	<u>90.7</u>	<u>2.721</u>

TABLE IIIb. (Continued)

MODEL COMPONENT : CANOPY - C9GENERAL DESCRIPTION : Configuration 3A. Canopy used with fuselageB₂₆MODEL SCALE: 0.030MODEL DWG: SS-A00147, Release 12DRAWING NUMBER : VL70-000143A

DIMENSIONS :	FULL SCALE	MODEL SCALE
Length ($X_0 = 434.643$ to 578), In.	<u>143.357</u>	<u>4.301</u>
Max Width (@ $X_0 = 513.127$), In.	<u>152.412</u>	<u>4.572</u>
Max Depth (@ $X_0 = 485.0$), In.	<u>25.00</u>	<u>0.750</u>
Fineness Ratio	<u> </u>	<u> </u>
Area	<u> </u>	<u> </u>
Max. Cross-Sectional	<u> </u>	<u> </u>
Planform	<u> </u>	<u> </u>
Wetted	<u> </u>	<u> </u>
Base	<u> </u>	<u> </u>

TABLE IIb. (Concluded)

MODEL COMPONENT : BODY FLAP - F_g

GENERAL DESCRIPTION : Configuration 140A/B orbiter body flap

Hingeline located at $X_0 = 1528.3$, $Z_0 = 284.3$

MODEL SCALE: 0.030 MODEL DWG: SS-AC0147. Release 12

DRAWING NUMBER: VL70-000140A, -000145

DIMENSIONS :	FULL SCALE	MODEL SCALE
Length ($X_0=1520$ to $X_0=1613$) In.	<u>93.00</u>	<u>2.79</u>
Max Width (In.)	<u>262.0</u>	<u>7.86</u>
Max Depth (@ $X_0 = 1520$), In.	<u>23.00</u>	<u>0.69</u>
Fineness Ratio	<u> </u>	<u> </u>
Area - Ft ²	<u> </u>	<u> </u>
Max. Cross-Sectional	<u> </u>	<u> </u>
Planform	<u>150.525</u>	<u>0.135</u>
Wetted	<u> </u>	<u> </u>
Base	<u>41.847</u>	<u>0.038</u>

TABLE IV. - CA5 DATASET DESCRIPTION

DATASET- TYPE	DESCRIPTION
RGMXXX	Main balance data which have been corrected for main balance mounting system tares and contain wall corrections.
AGMXXX	Orbiter (internal) balance "basic" data which contains "standard" wind tunnel corrections including a wall correction.
BGMXXX	Main balance data (corrected for main balance mounting system tares) minus orbiter (internal) balance "basic" data (RGMXXX-AGMXXX).
RGMCXX	Main balance mounting system tare data.

Notes:

1. Positive directions of force coefficients, moment coefficients, and angles are indicated by arrows
2. For clarity, origins of wind and stability axes have been displaced from the center of gravity

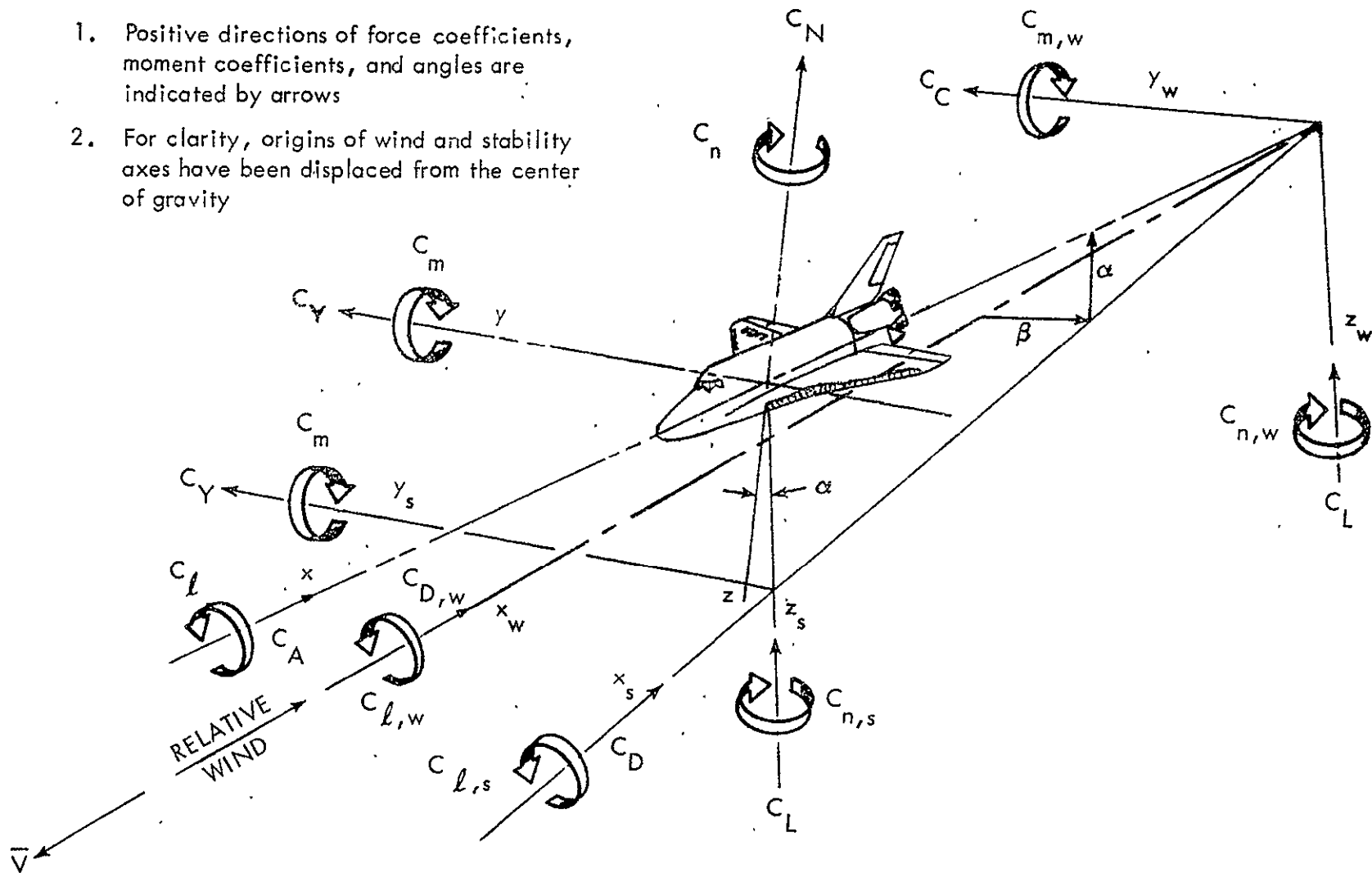
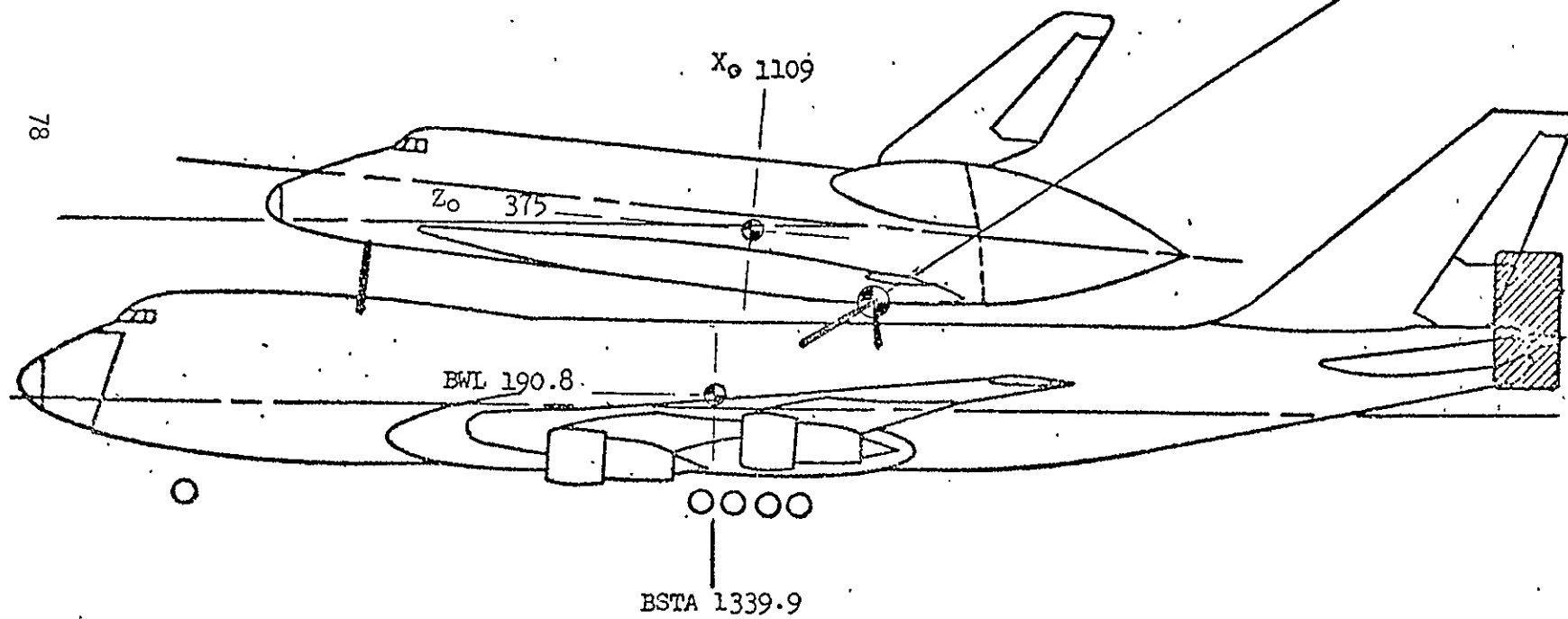


Figure A. - Axis systems.

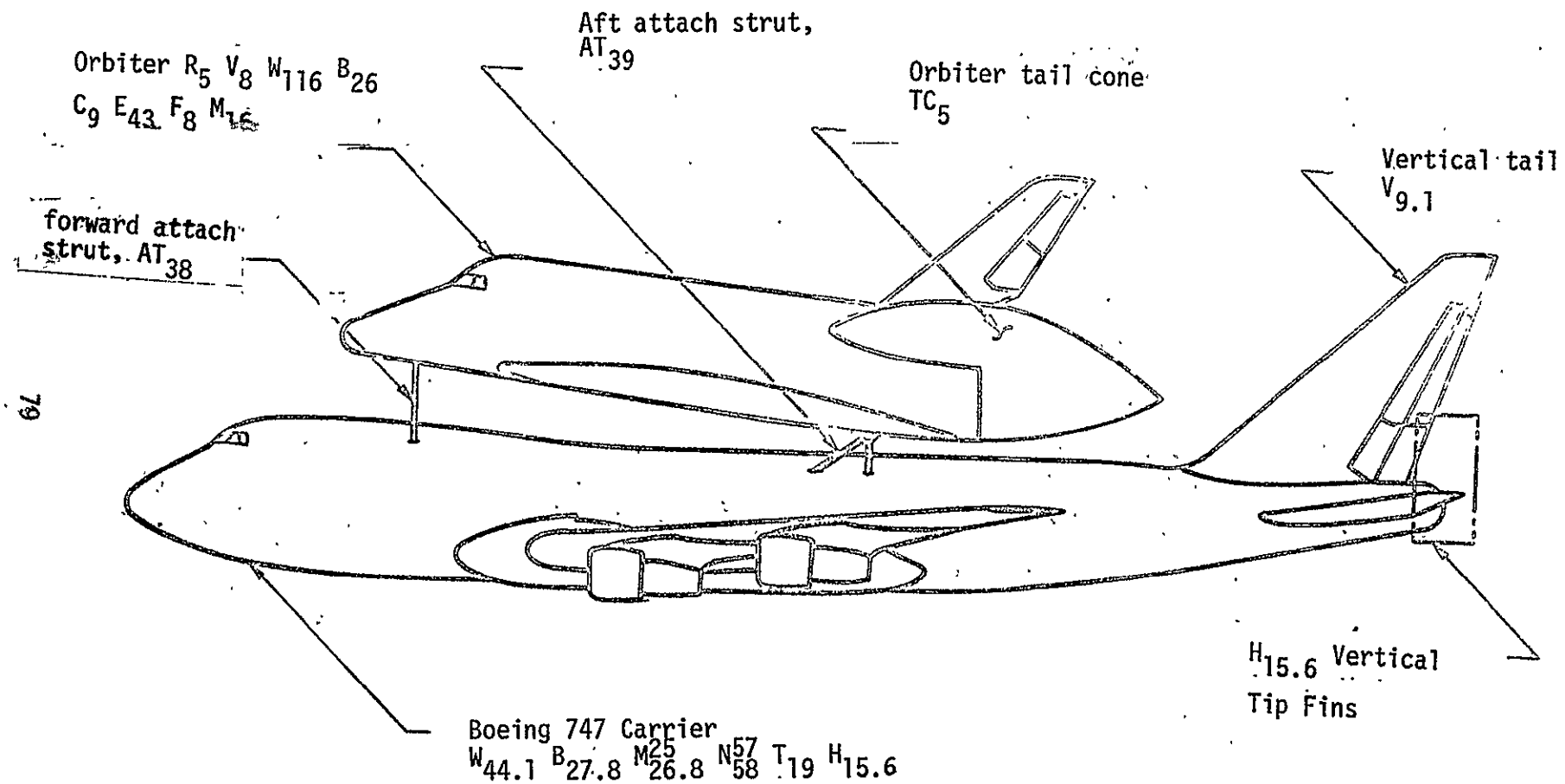
REFERENCE DIMENSIONS (FS)

	ORBITER	747 CARRIER
WING AREA $\sim \text{Ft}^2$	2690	5500
MAC (\bar{c}) \sim INCHES	474.81	327.78
SPAN (b) \sim INCHES	936.68	2348.04
MOMENT REFERENCE CENTER	67.5% LB	25.0 % \bar{C}
F.S. \sim INCHES	1109.0	1339.9
W.P. \sim INCHES	375.0	190.8

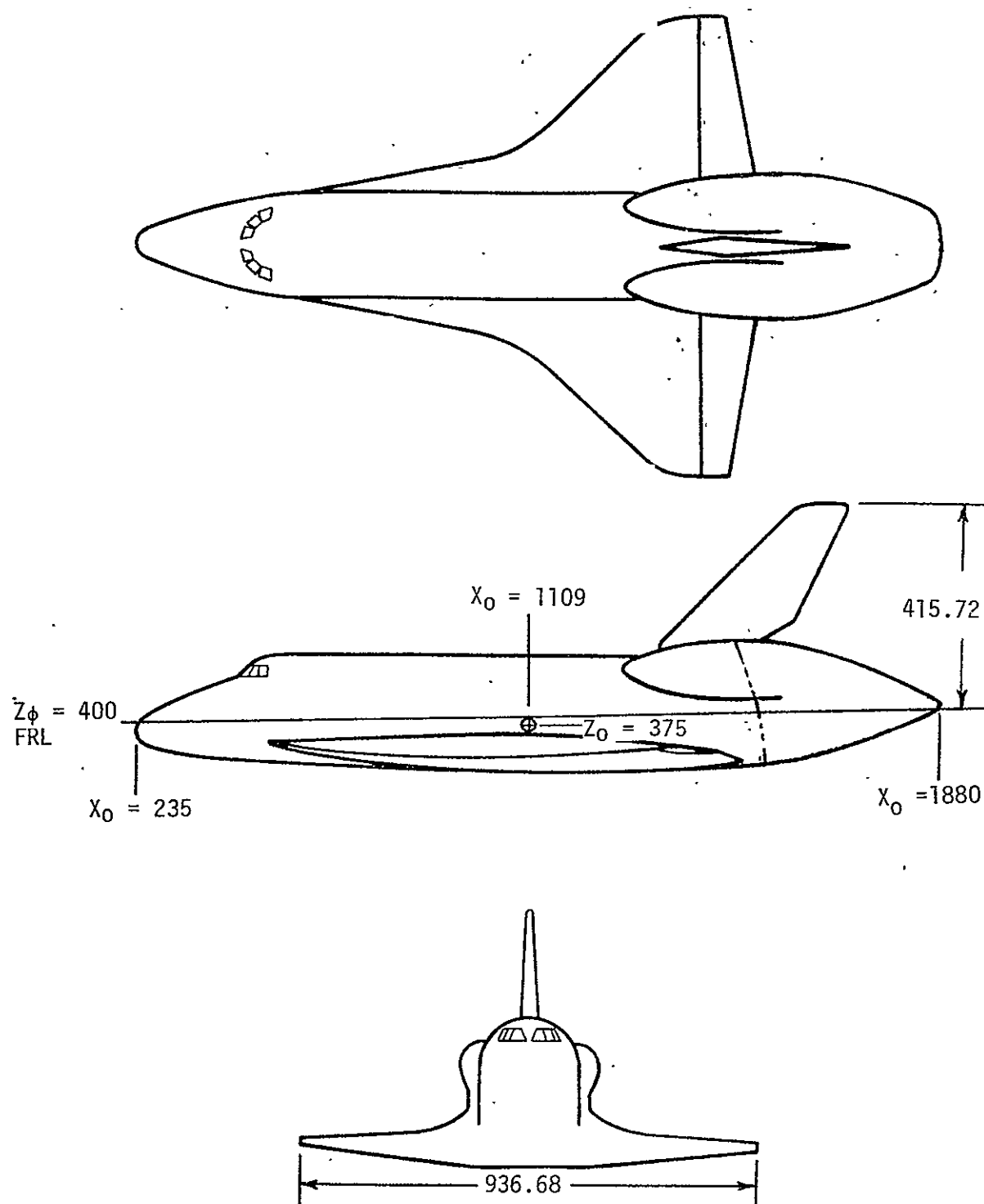
BWL 400 (Y_o 96 51)
 BSTA 1607 (Z_o 267.5)
 (X_o 1317)



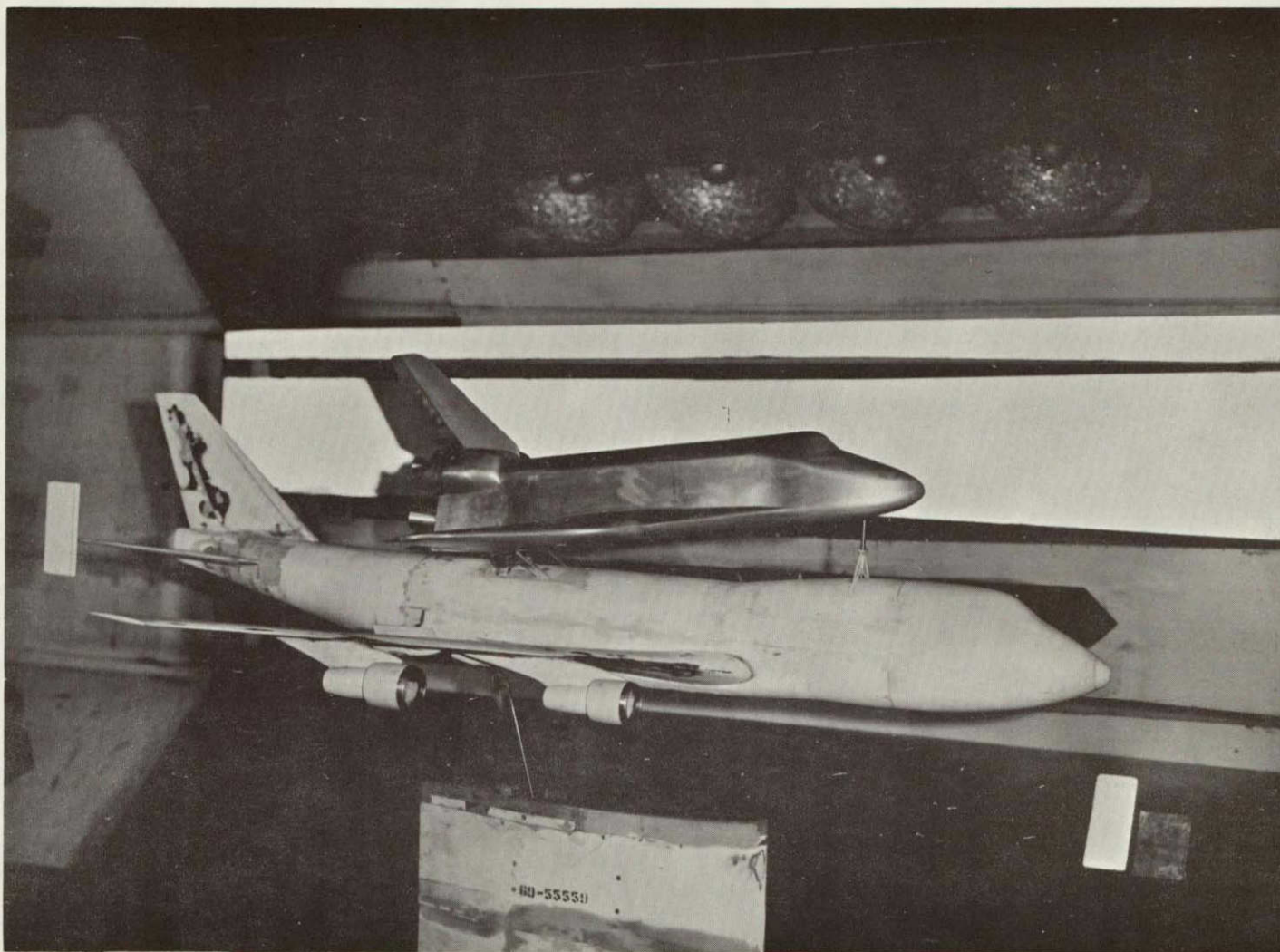
a. Orbiter/747 Flight Test Configuration Reference Dimensions
 Figure B. - Model sketches.



b. Orbiter/Carrier Model Nomenclature
Figure B. - Continued.



c. Orbiter Configuration
Figure B. - Continued.

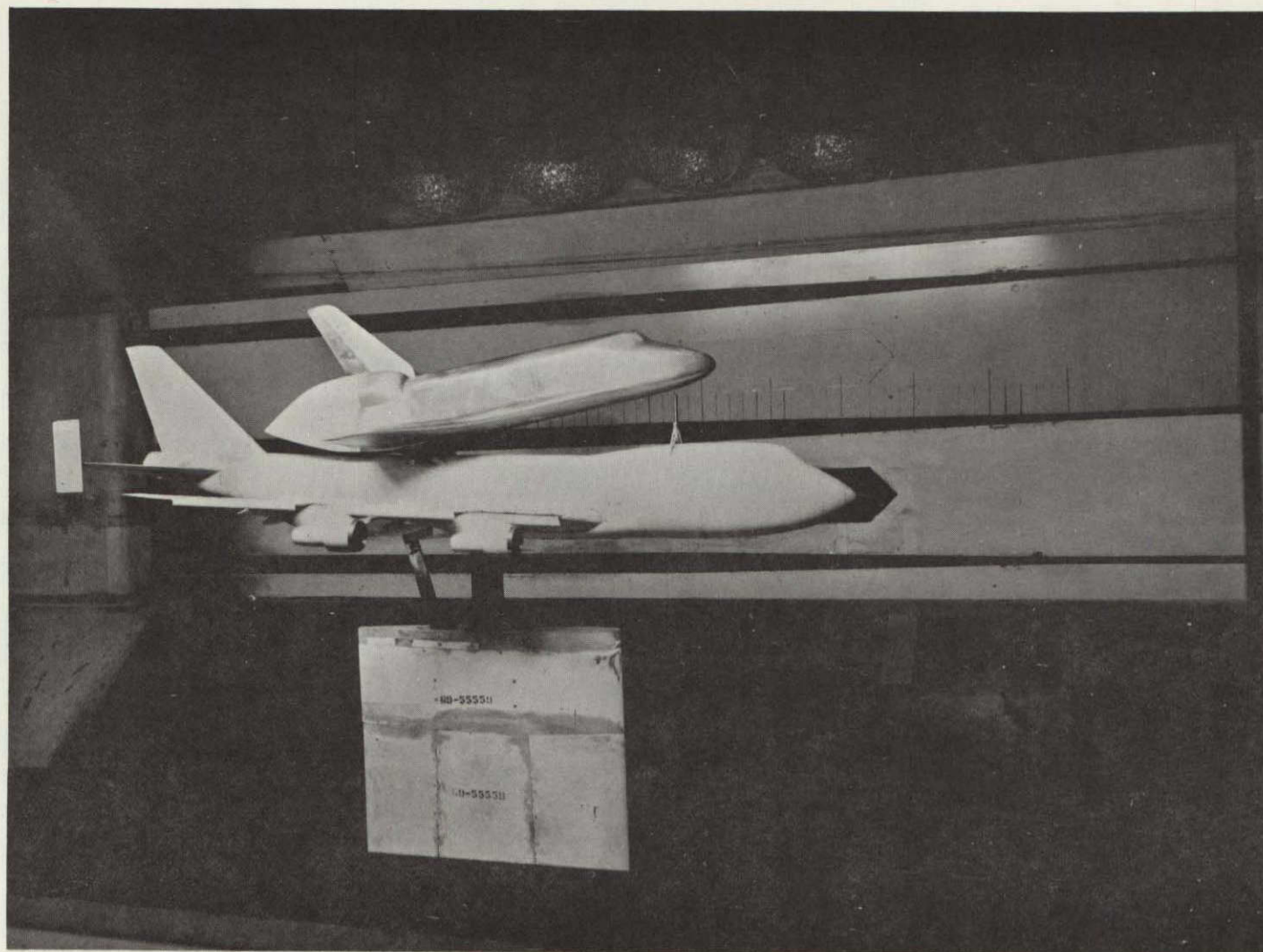


a. Orbiter/Carrier Mated Configuration Side View $i_{ORB} = 8^\circ$,
Orbiter without Tail Cone Fairing

Figure C. - Model photographs.

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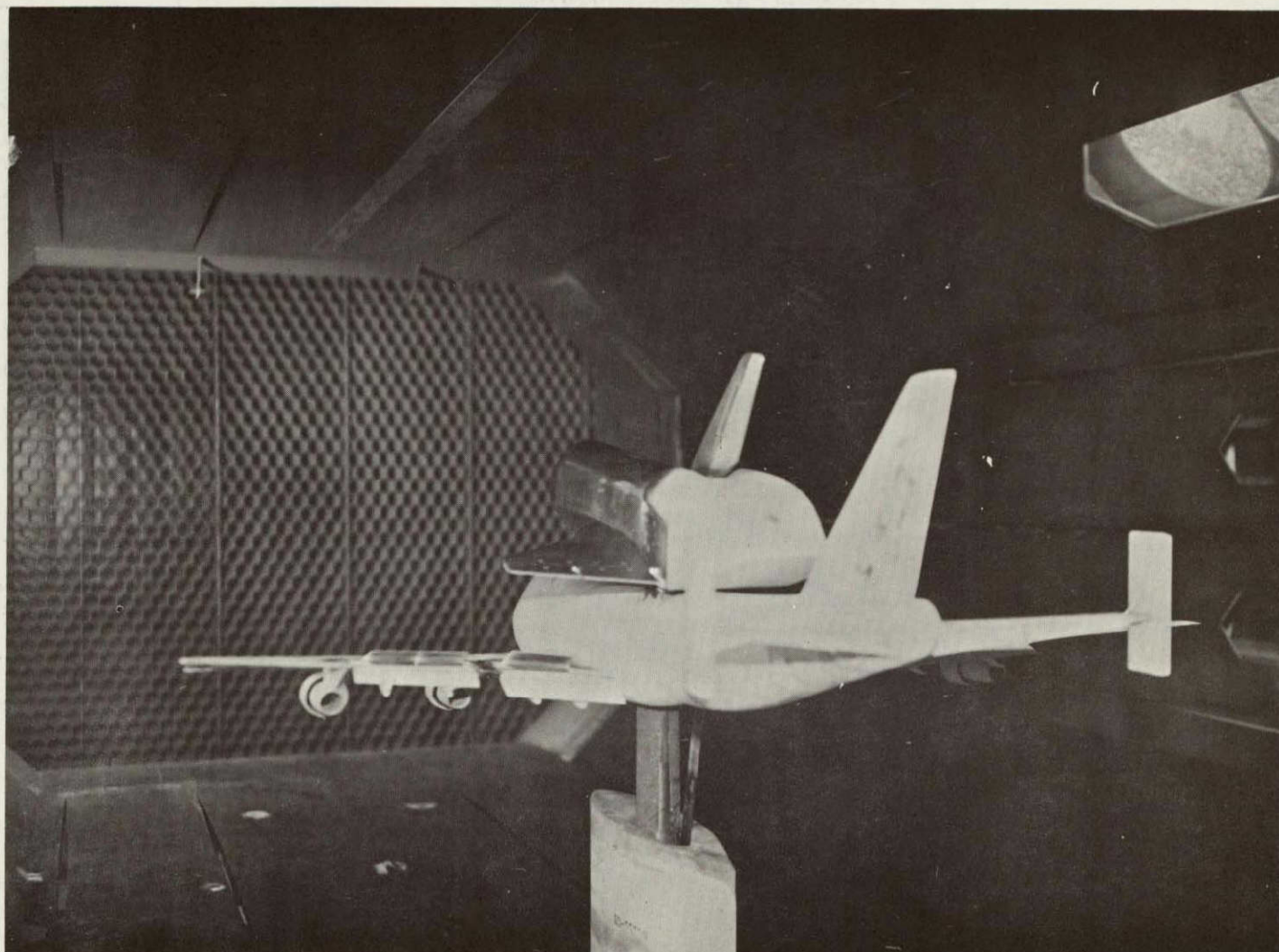


b. Orbiter/Carrier Mated Configuration Side View $i_{ORB} = 10^\circ$,
Orbiter with Tail Cone Fairing

Figure C. - Continued.

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83



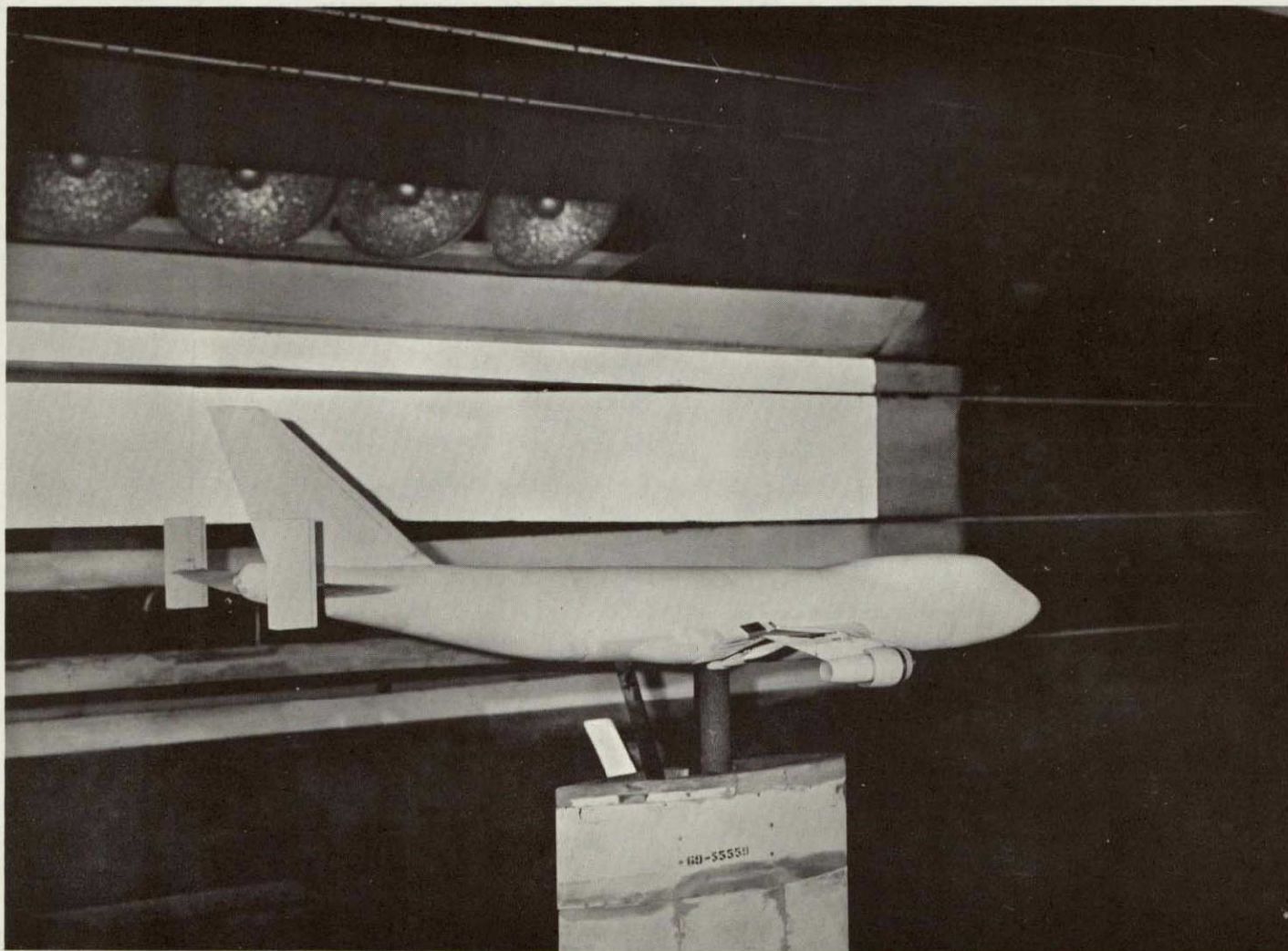
c. Orbiter/Carrier Rear View

Figure C. - Continued.



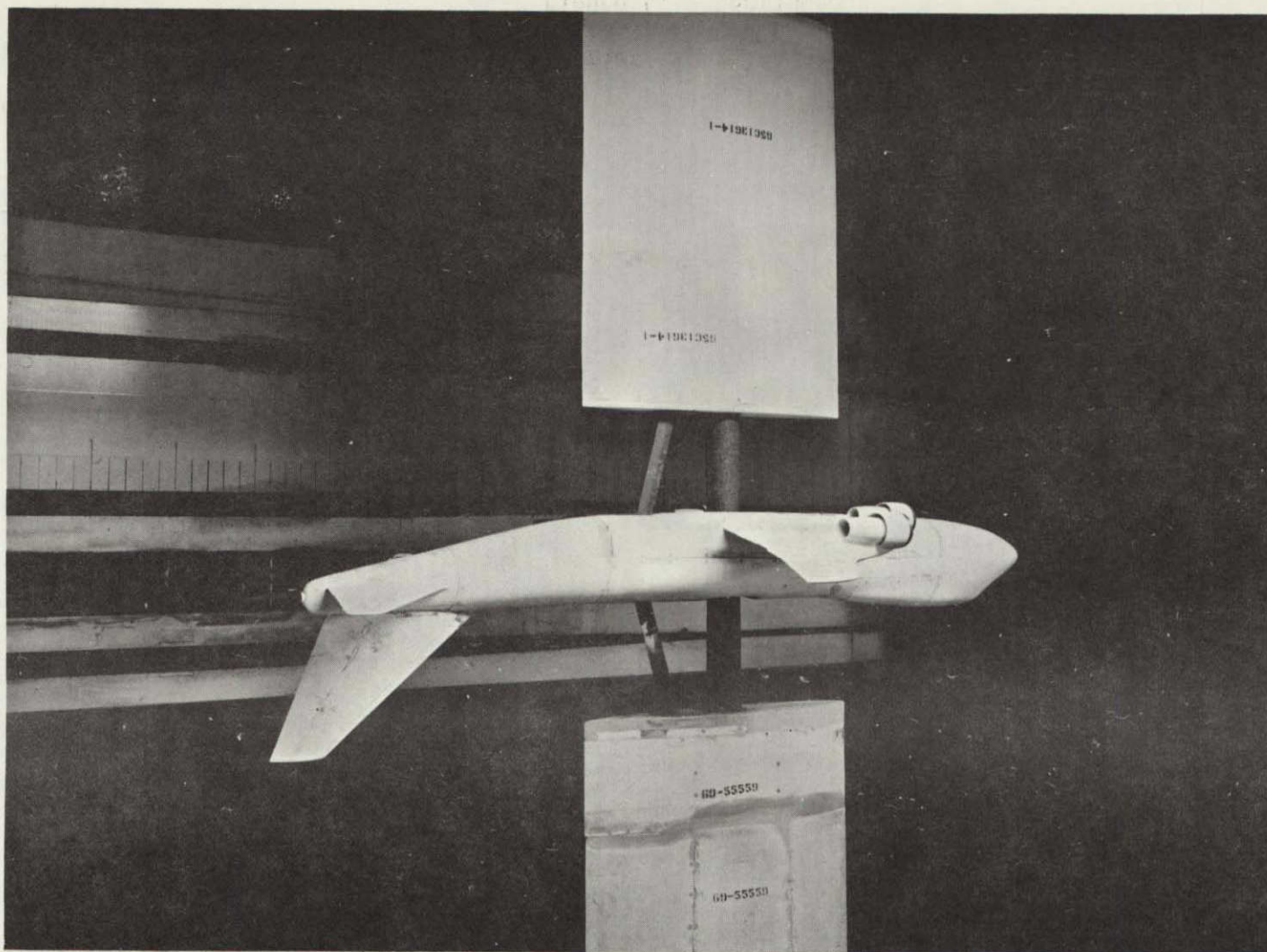
d. Orbiter Alone Installation

Figure C. - Continued.



e. Carrier Alone Installation

Figure C. - Continued.



f. Carrier Inverted with Image Strut for Determination
of Wind Tunnel Strut Tare and Interference Effects

Figure C. - Concluded.

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BTWT-1431CA5 K1 FO

V9.1

(RGM039)

SYMBOL	MACH	PARAMETRIC VALUES			
○	.150	BETA	.000	RUD-U	.000
□	.299	RUD-L	.000	S1-2	.000
◇	.500	S3-4	.000	S5-6	.000
△	.600				
▽	.700				

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

LIFT COEFFICIENT, CL

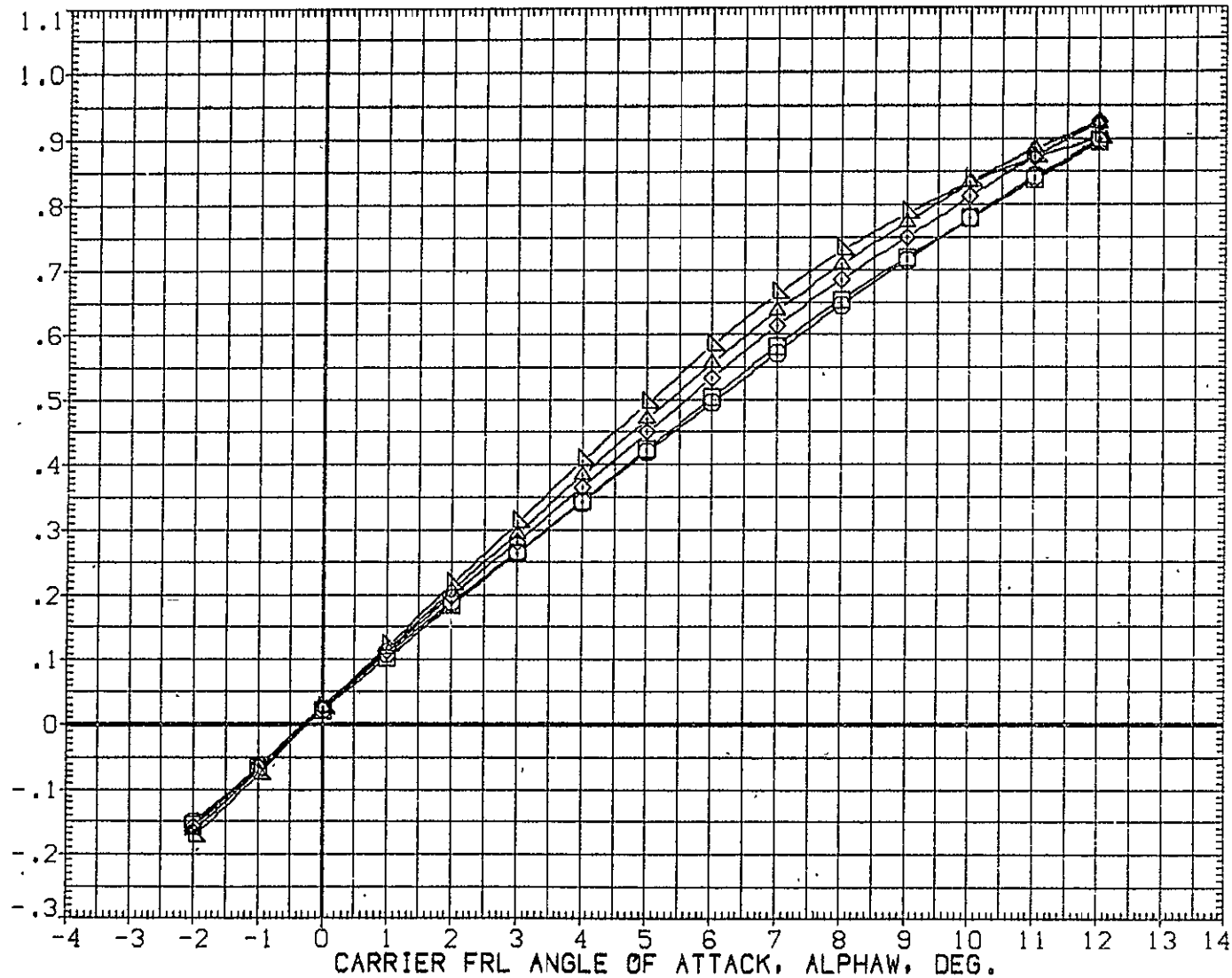


FIG. 1 747 ALONE, BASIC AIRPLANE FLAPS UP, HORIZ TAIL OFF

SYMBOL	MACH	PARAMETRIC VALUES			
○	.150	BETA	.000	RUD-U	.000
□	.299	RUD-L	.000	S1-2	.000
◇	.500	S3-4	.000	S5-6	.000
△	.600				
▽	.700				

REFERENCE INFORMATION		
SREF	5500.0000	SQ. FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

LIFT COEFFICIENT, CL

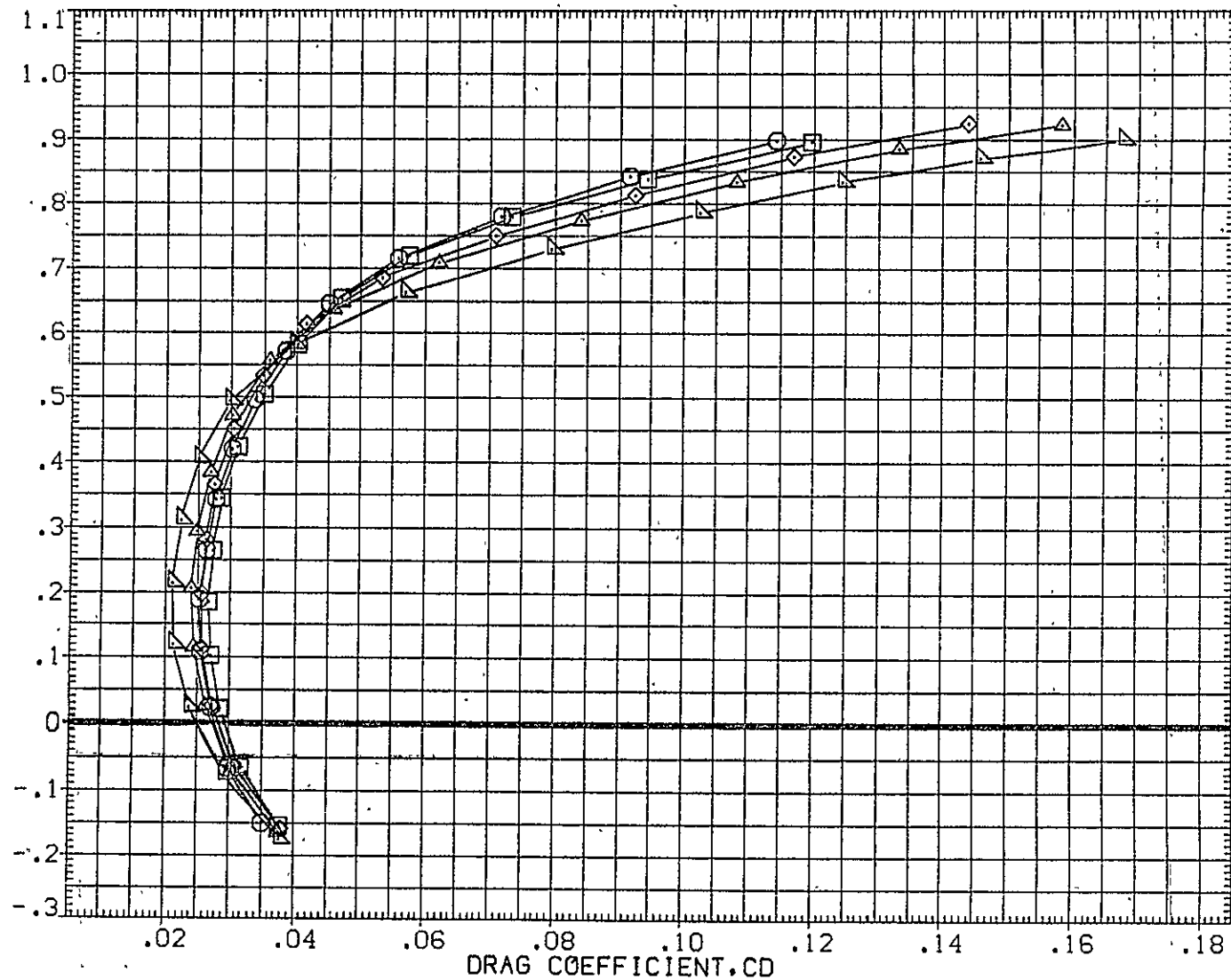


FIG. 1 747 ALONE, BASIC AIRPLANE FLAPS UP, HORIZ TAIL OFF

BTWT-1431CA5 K1 F0

V9.1

(RGM039)

SYMBOL	MACH	PARAMETRIC VALUES			
○	.150	BETA	.000	RUD-U	.000
□	.299	RUD-L	.000	S1-2	.000
◇	.500	S3-4	.000	S5-6	.000
△	.600				
▽	.700				

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. YC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. YC
SCALE	.0300	

LIFT COEFFICIENT, CL

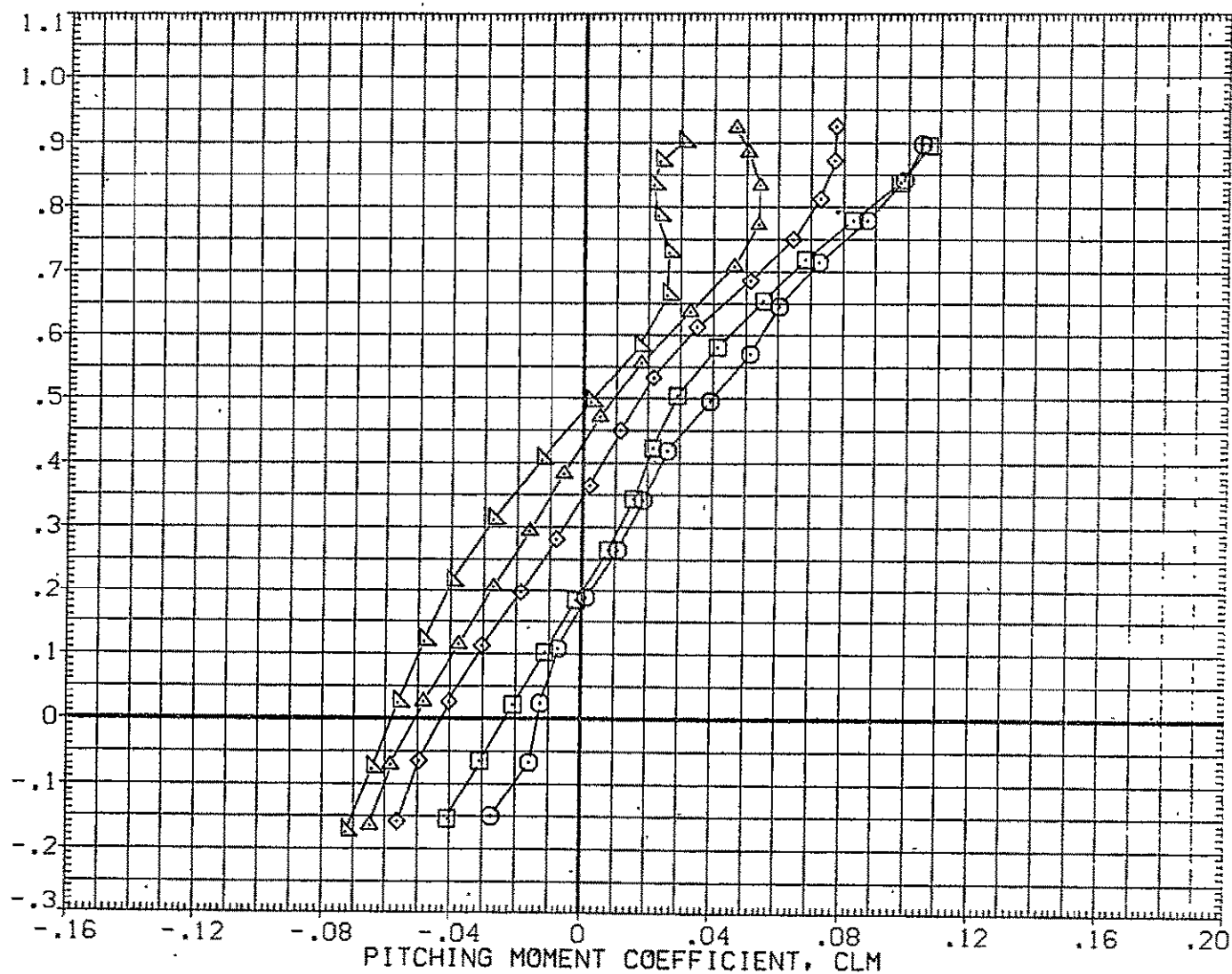


FIG. 1 747 ALONE, BASIC AIRPLANE FLAPS UP, HORIZ TAIL OFF

SYMBOL	MACH	BETA	PARAMETRIC VALUES	RUD-U	
○	.1150		.000		.000
◇	.299	RUD-L	.000	S1-2	.000
□	.500	S3-4	.000	S5-6	.000
△	.600				
▽	.700				

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

CARRIER FRL ANGLE OF ATTACK, ALPHA, DEG.



FIG. 1 747 ALONE, BASIC AIRPLANE FLAPS UP, HORIZ TAIL OFF

BTWT-1431CA5 K1 FO H15.1A V9.1

(RGM040)

SYMBOL	MACH	PARAMETRIC VALUES				REFERENCE INFORMATION		
○	.150	BETA	.000	STAB	-2.000	SREF	5500.0000	SQ.FT.
□	.300	RUD-U	.000	RUD-L	.000	LREF	327.8000	IN.
◇	.500	ELV-1B	.000	ELV-0B	3.000	BREF	2348.0000	IN.
△	.600	S1-2	.000	S3-4	.000	XMRP	1339.9100	IN. XC
▽	.700	S5-6	.000			YMRP	.0000	IN. YC
						ZMRP	190.7500	IN. ZC
						SCALE	.0300	

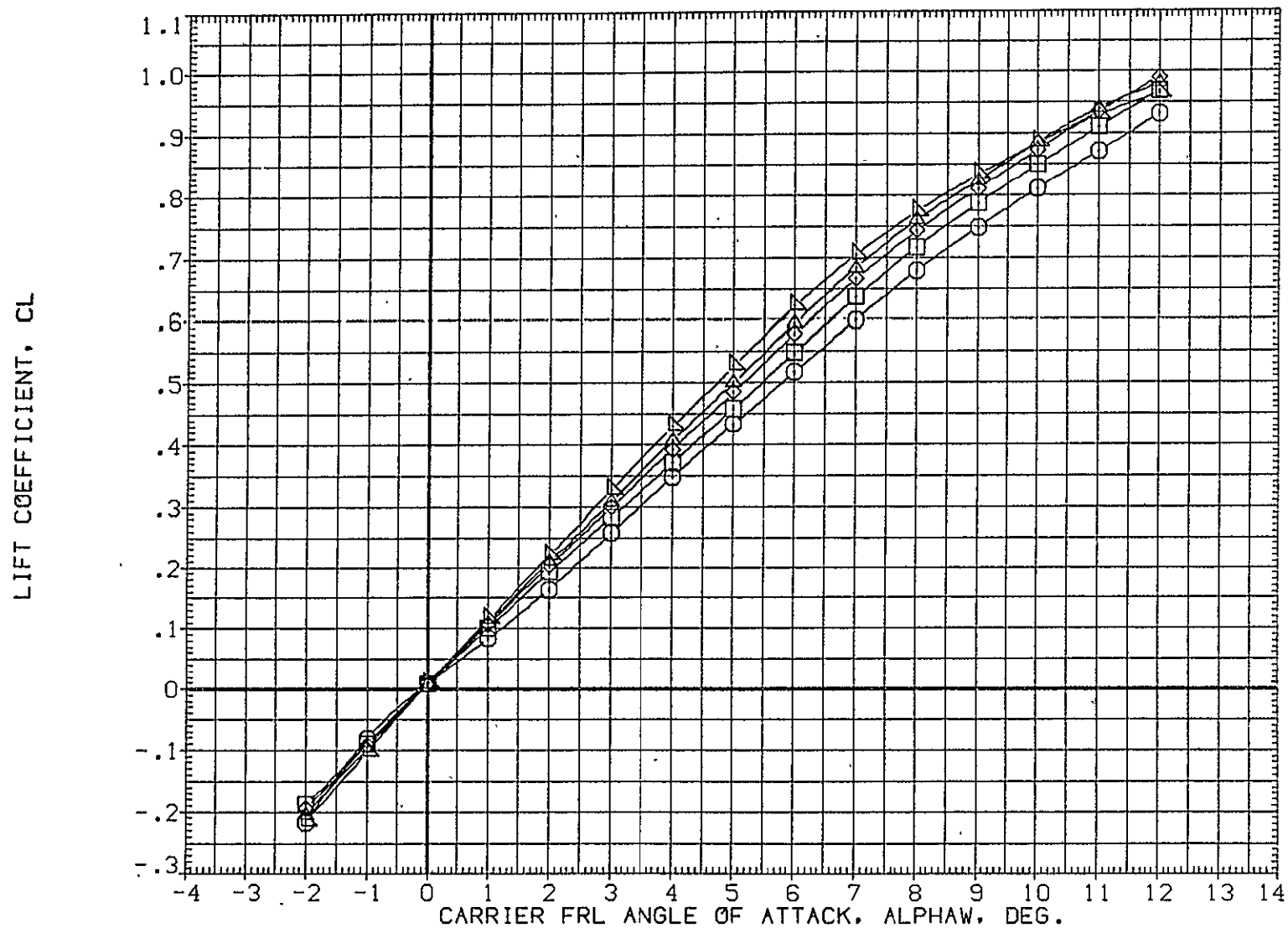


FIG. 2 747 ALONE, BASIC AIRPLANE FLAPS UP, TAIL ON(S=-2)

SYMBOL	MACH	PARAMETRIC VALUES			
○	.150	BETA	.000	STAB	-2.000
□	.300	RUD-U	.000	RUD-L	.000
◇	.500	ELV-1B	.000	ELV-0B	3.000
△	.600	S1-2	.000	S3-4	.000
▽	.700	S5-6	.000		

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.6000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

LIFT COEFFICIENT, CL

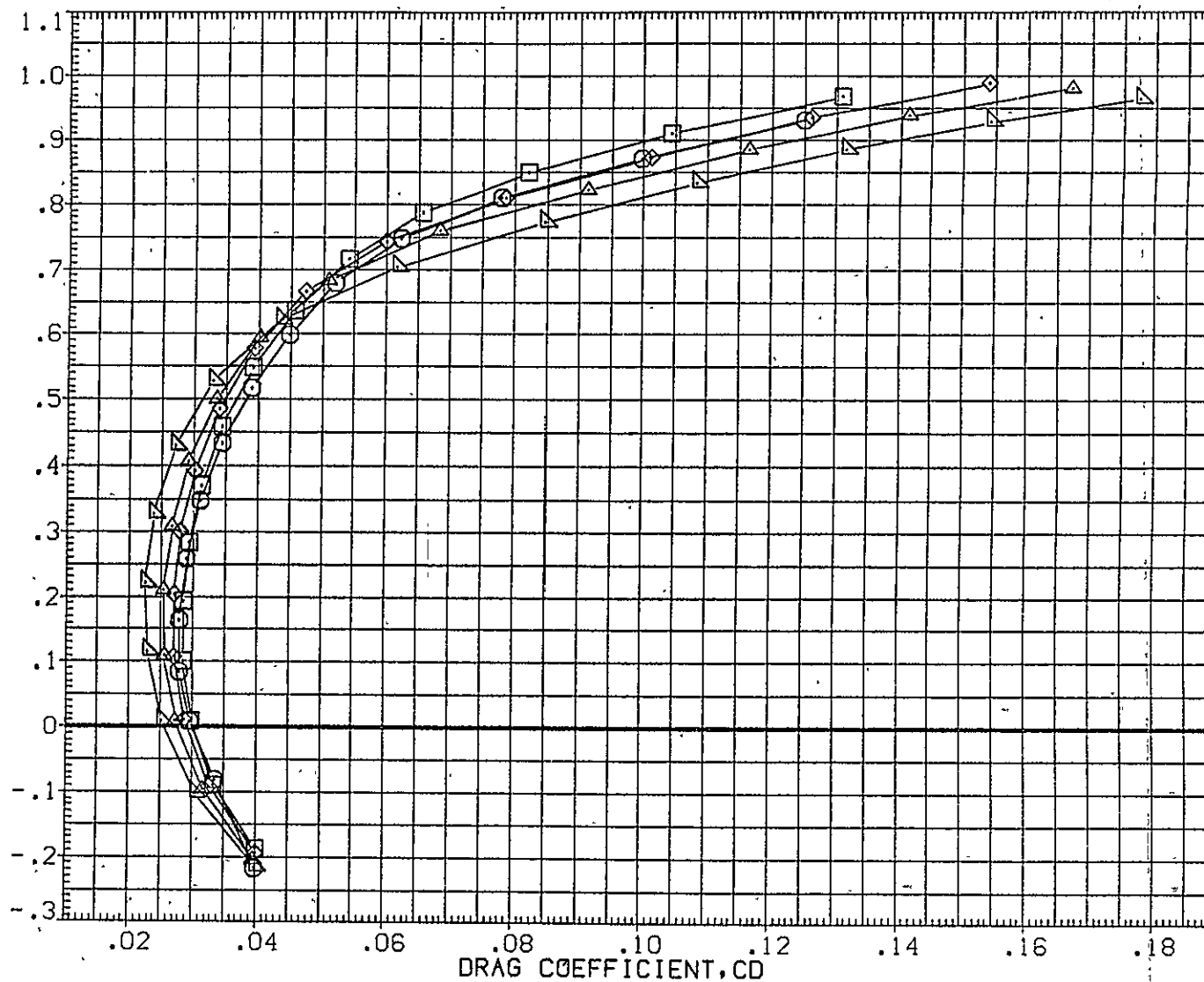


FIG. 2 747 ALONE, BASIC AIRPLANE FLAPS UP, TAIL ON (S=-2)

BTWT-1431CA5 K1 F0 H15.1A V9.1

(RGM040)

SYMBOL	MACH	PARAMETRIC VALUES				REFERENCE INFORMATION		
○	.150	BETA	.000	STAB	-2.000	SREF	5500.0000	SQ.FT.
□	.300	RUD-U	.000	RUD-L	.000	LREF	327.8000	IN.
◇	.500	ELV-1B	.000	ELV-0B	3.000	BREF	2348.0000	IN.
△	.600	S1-2	.000	S3-4	.000	XMRP	1339.9100	IN. XC
▽	.700	S5-6	.000			YMRP	.0000	IN. YC
						ZMRP	190.7500	IN. ZC
						SCALE	.0300	

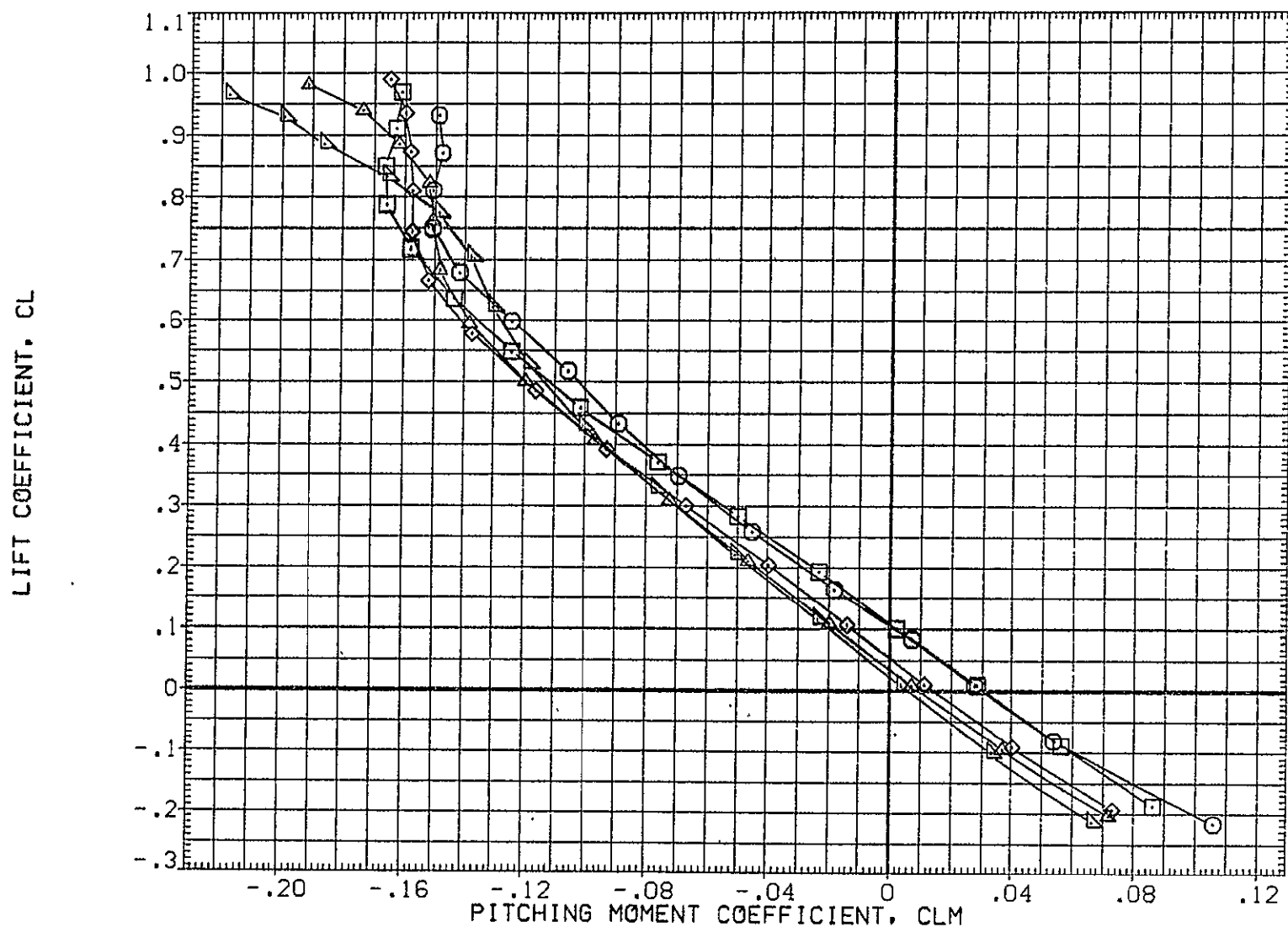
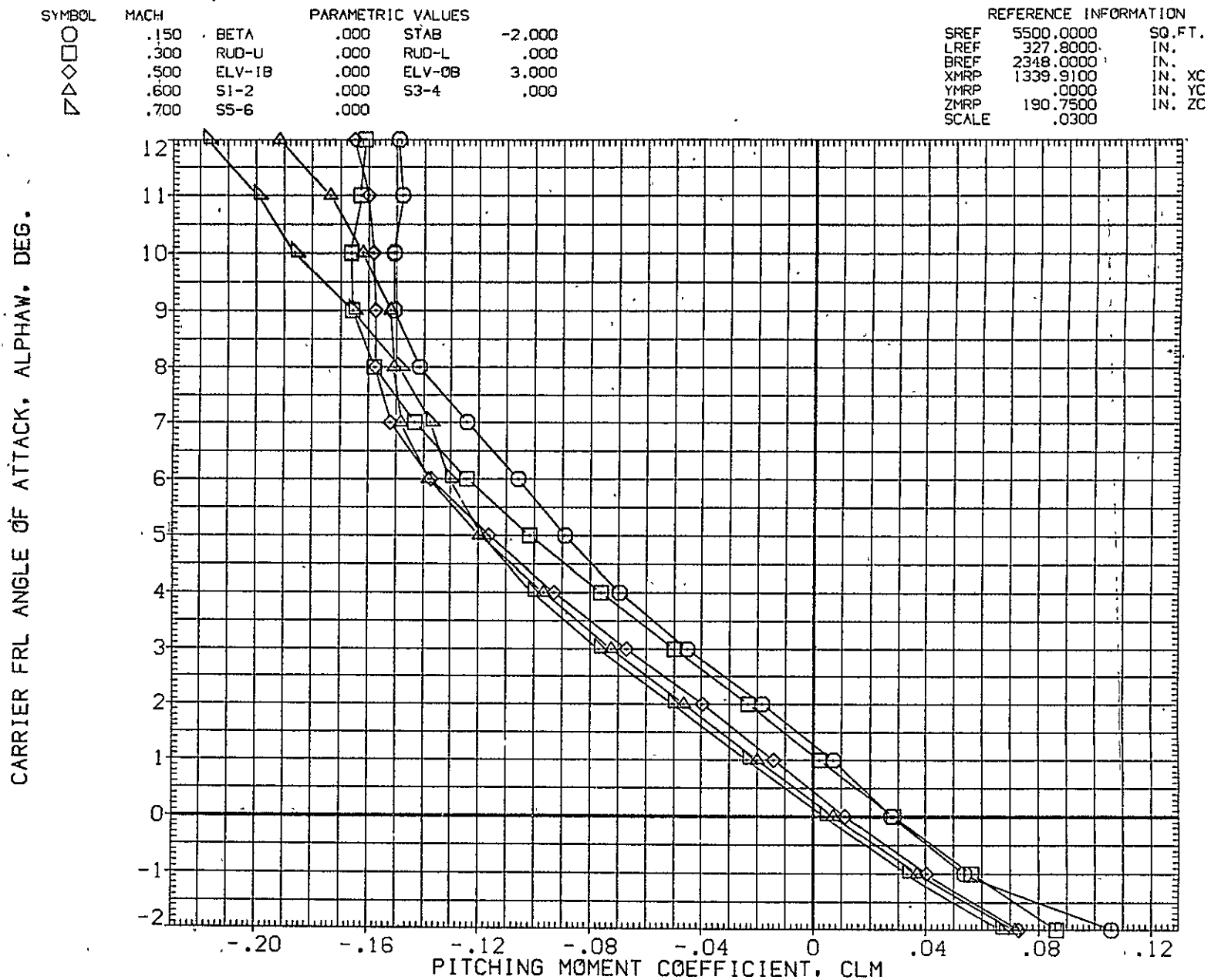


FIG. 2 747 ALONE, BASIC AIRPLANE FLAPS UP, TAIL ON(S=-2)



BTWT-1431CA5 K1 FO H15.6 V9.1

(RGM042)

SYMBOL	MACH	PARAMETRIC VALUES				REFERENCE INFORMATION		
○	.150	BETA	.000	STAB	-2.000	SREF	5500.0000	SQ.FT.
□	.300	RUD-U	.000	RUD-L	.000	LREF	327.8000	IN.
◇	.500	ELV-1B	.000	ELV-0B	3.000	BREF	2348.0000	IN.
△	.600	S1-2	.000	S3-4	.000	XMRP	1339.9100	IN. XC
▽	.700	SS-6	.000			YMRP	.0000	IN. YC
						ZMRP	190.7500	IN. ZC
						SCALE	.0300	

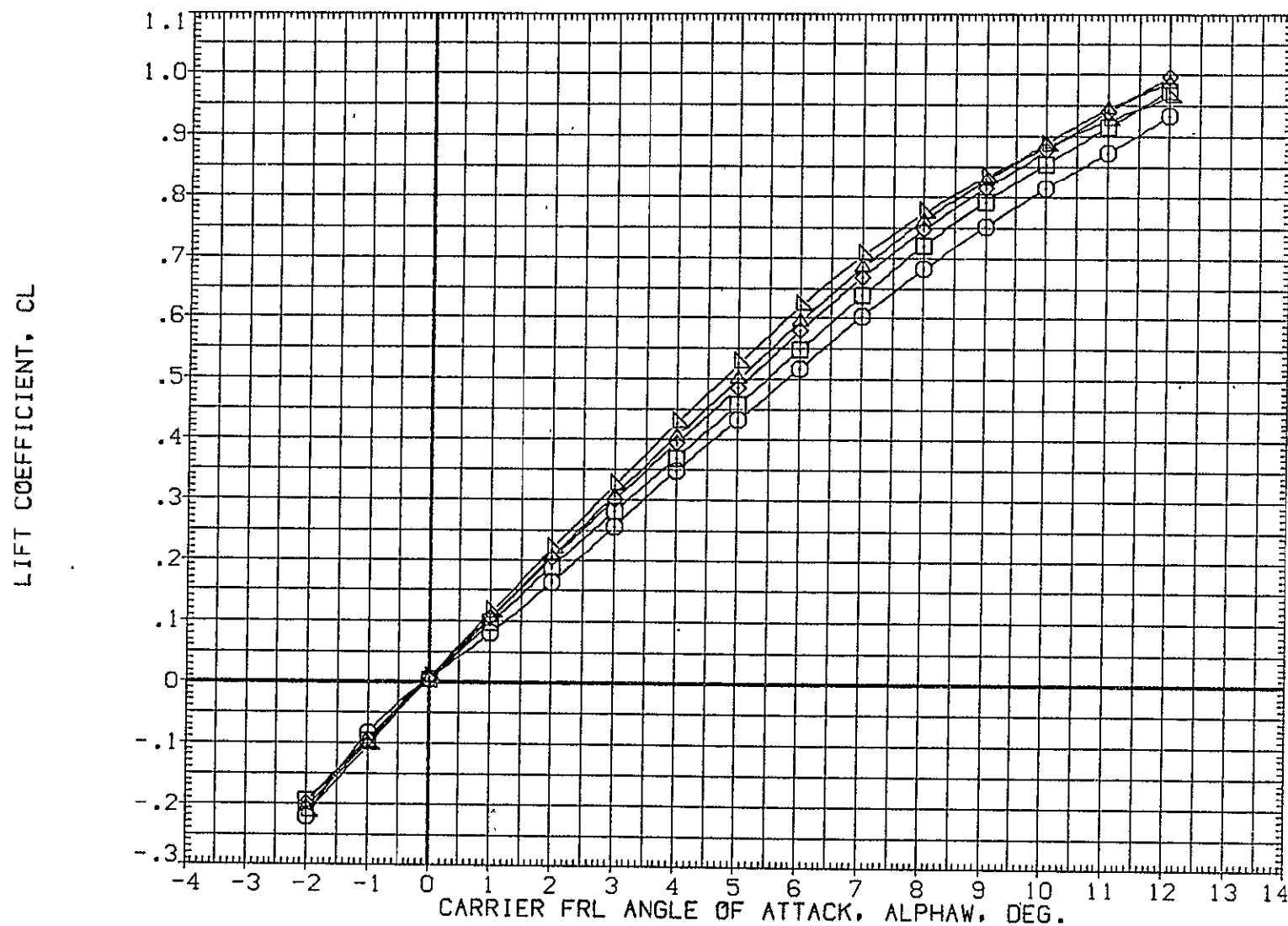


FIG. 3 747 ALONE+TIP FINS FLAPS UP, TAIL ON(S=-2)

SYMBOL	MACH	PARAMETRIC VALUES				REFERENCE INFORMATION		
○	.150	BETA	.000	STAB	-2.000	SREF	5500.0000	50.FT.
□	.300	RUD-U	.000	RUD-L	.000	LREF	327.8000	IN.
◇	.500	ELV-1B	.000	ELV-0B	3.000	BREF	2348.0000	IN.
△	.600	S1-2	.000	S3-4	.000	XMRP	1339.9100	IN. XC
▽	.700	S5-6	.000			YMRP	.0000	IN. YC
						ZMRP	190.7500	IN. ZC
						SCALE	.0300	

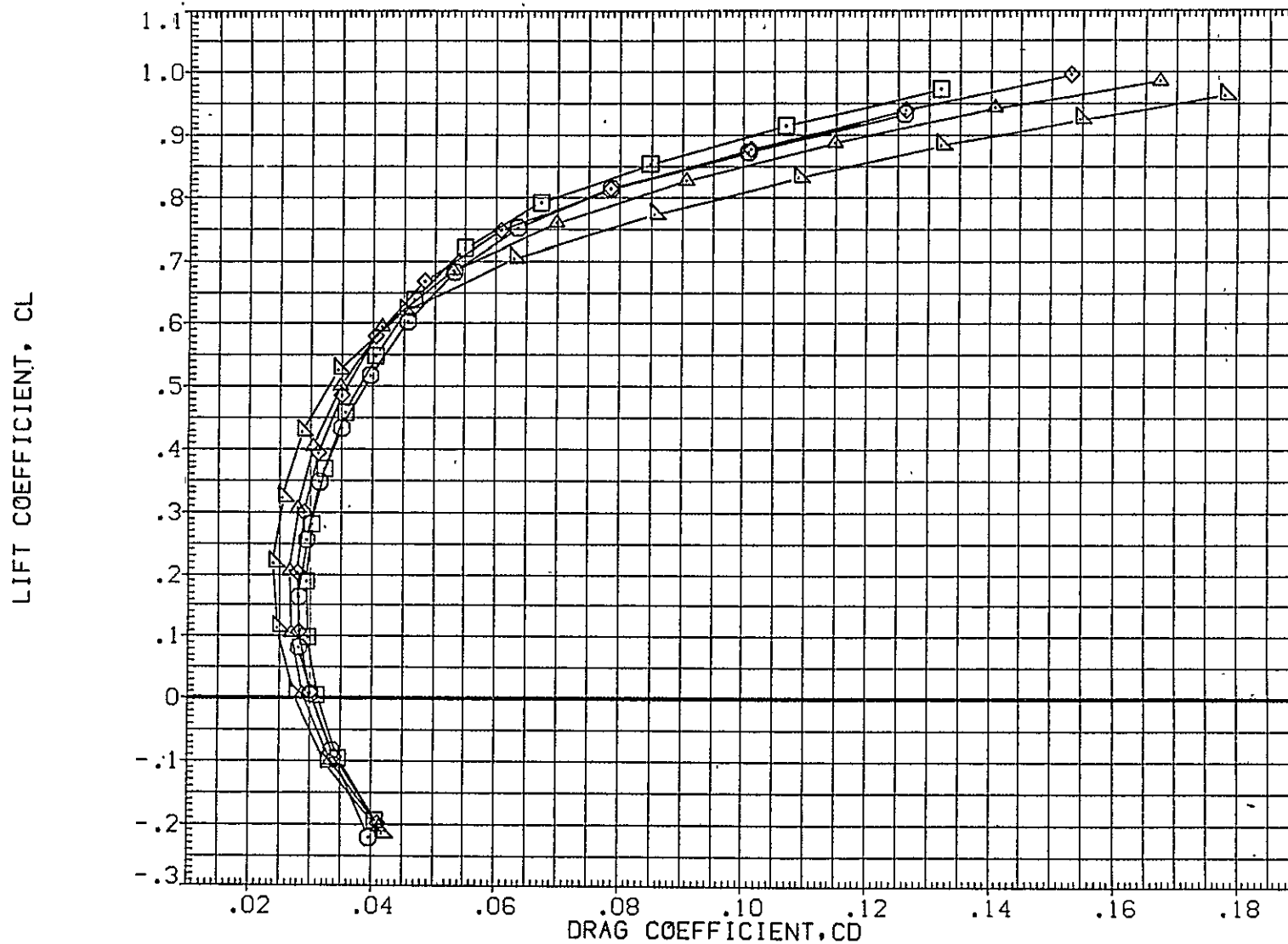


FIG. 3 747 ALONE+TIP FINS FLAPS UP, TAIL ON(S=-2)

BTWT-1431CA5 K1 FO H15.6 V9.1

(RGM042)

SYMBOL	MACH	PARAMETRIC VALUES				REFERENCE INFORMATION		
○	.150	BETA	.000	STAB	-2.000	SREF	5500.0000	50.FT.
□	.300	RUD-U	.000	RUD-L	.000	LREF	327.8000	IN.
◇	.500	ELV-IB	.000	ELV-OB	3.000	BREF	2348.0000	IN.
△	.600	S1-2	.000	S3-4	.000	XMRP	1339.9100	IN. XC
▽	.700	S5-6	.000			YMRP	.0000	IN. YC
						ZMRP	190.7500	IN. ZC
						SCALE	.0300	

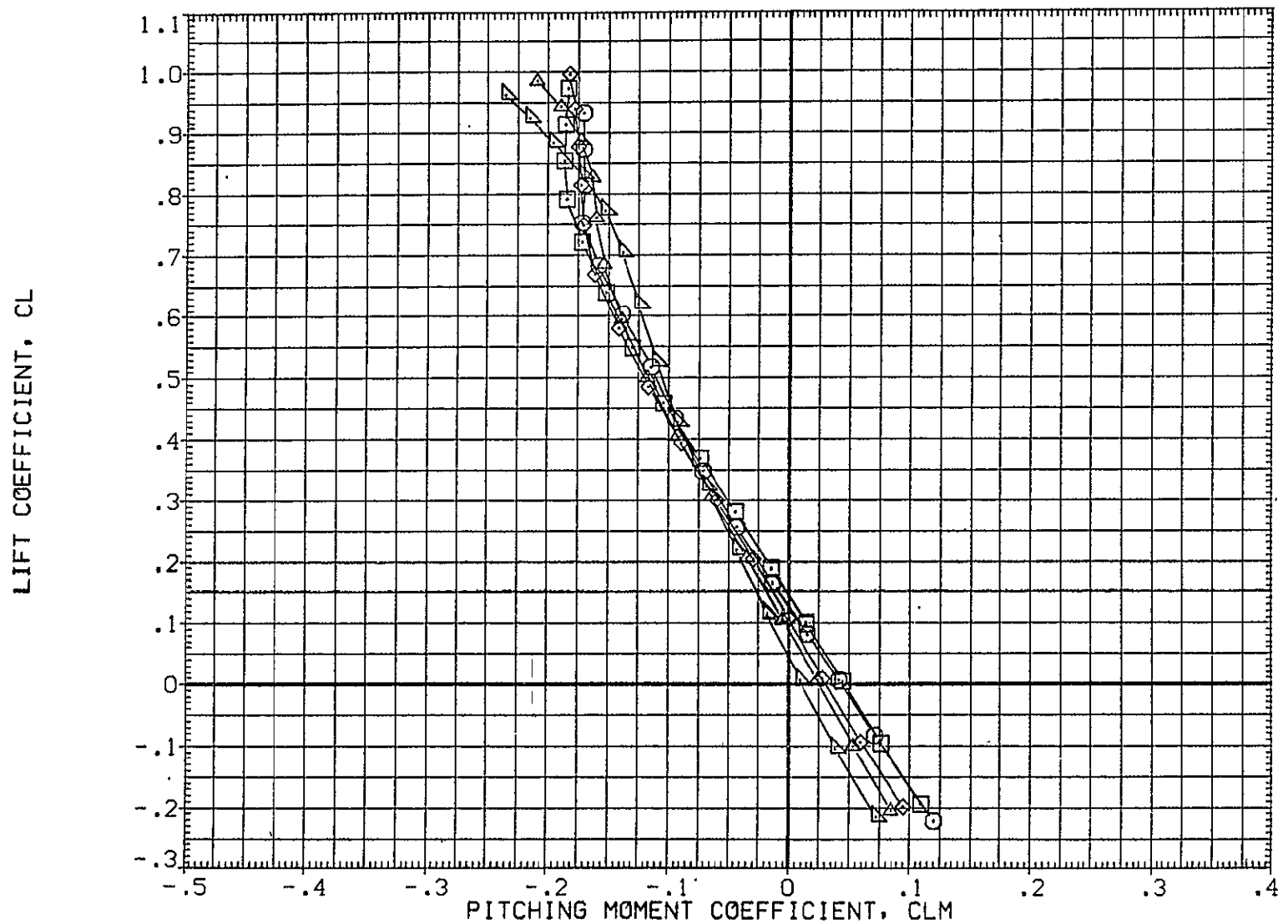


FIG. 3 747 ALONE+TIP FINS FLAPS UP, TAIL ON(S=-2)

SYMBOL	MACH	PARAMETRIC VALUES				REFERENCE INFORMATION		
○	.150	BETA	.000	STAB	-2.000	SREF	5500.0000	SQ.FT.
□	.300	RUD-U	.000	RUD-L	.000	LREF	327.8000	IN.
◇	.500	ELV-1B	.000	ELV-0B	3.000	BREF	2348.0000	IN.
△	.600	S1-2	.000	S3-4	.000	XMRP	1339.9100	IN. XC
▽	.700	S5-6	.000			YMRP	.0000	IN. YC
						ZMRP	190.7500	IN. ZC
						SCALE	.0300	

CARRIER FRL ANGLE OF ATTACK, ALPHA, DEG.

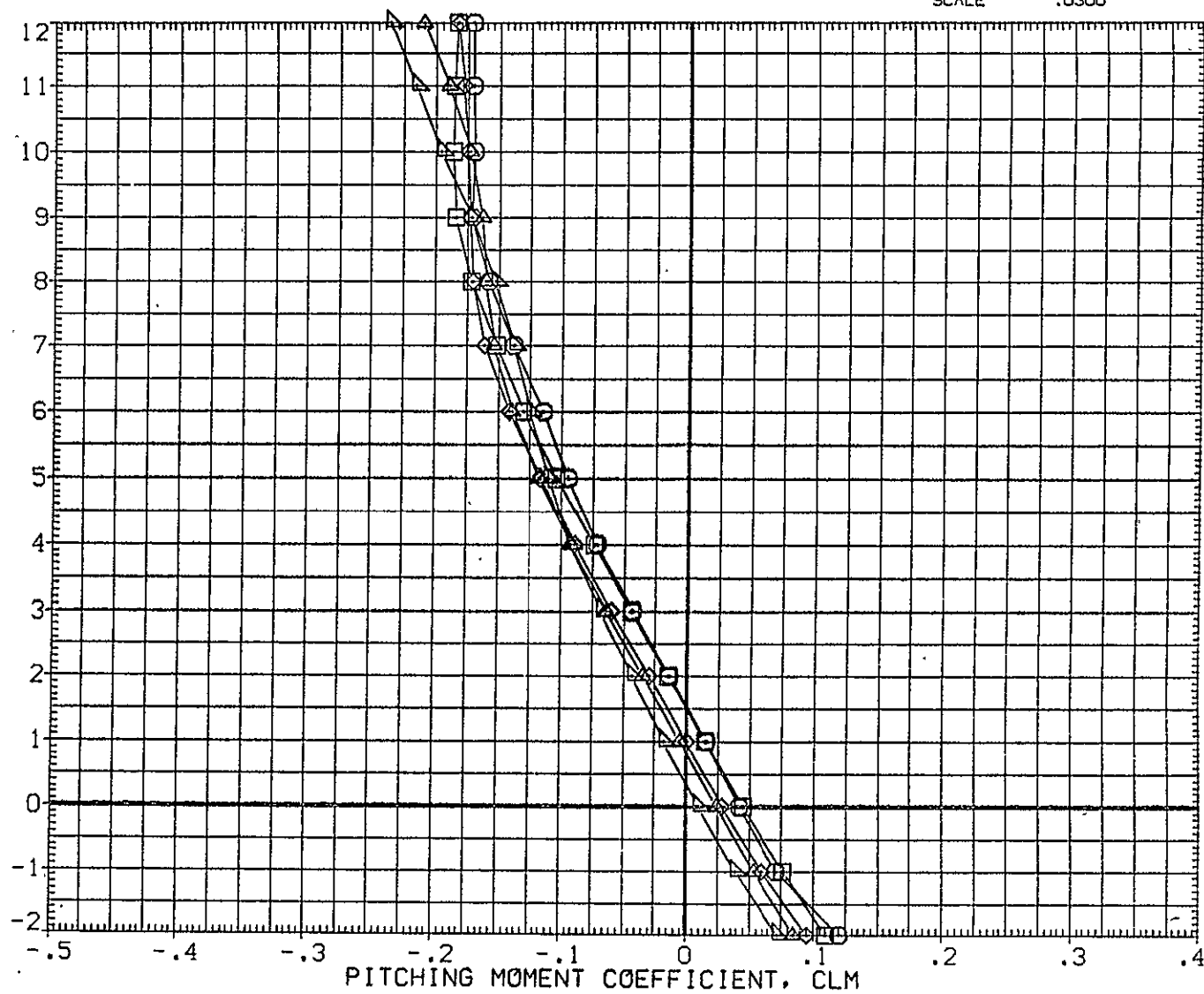


FIG. 3 747 ALONE+TIP FINS FLAPS UP, TAIL ON(S=-2)

BTWT-1431CA5 K1 F0 H15.6 V9.1

(RGM044)

SYMBOL	MACH	PARAMETRIC VALUES				REFERENCE INFORMATION		
○	.150	BETA	.000	STAB	1.000	SREF	5500.0000	SQ.FT.
□	.300	RUD-U	.000	RUD-L	.000	LREF	327.8000	IN.
◇	.500	ELV-1B	.000	ELV-0B	3.000	BREF	2348.0000	IN.
△	.600	S1-2	.000	S3-4	.000	XMRP	1339.9100	IN. XC
▽	.700	S5-6	.000			YMRP	.0000	IN. YC
						ZMRP	190.7500	IN. ZC
						SCALE	.0300	

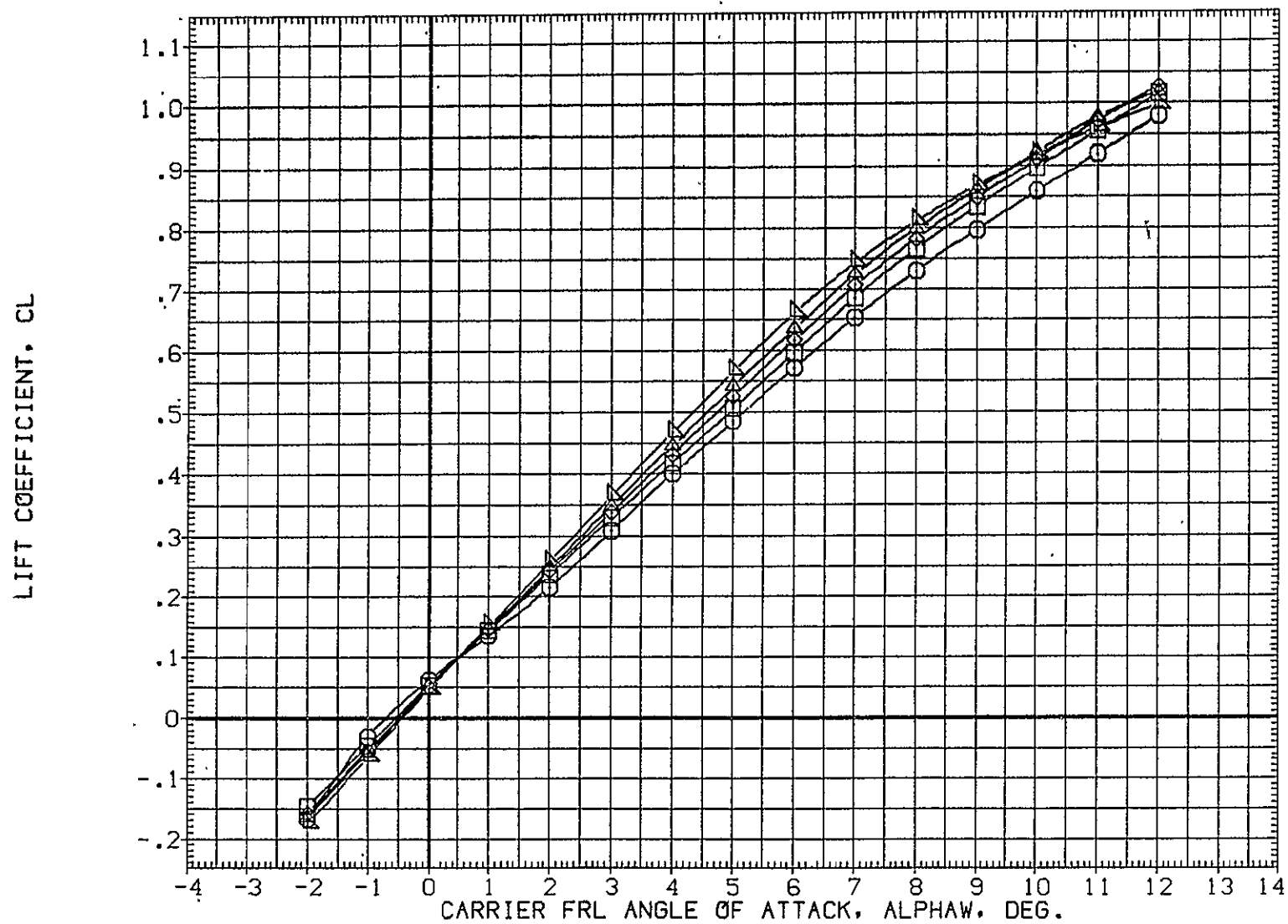


FIG. 4 747 ALONE+TIP FINS FLAPS UP, TAIL ON(S=+1)

SYMBOL	MACH	PARAMETRIC VALUES			
○	.150	BETA	.000	STAB	1.000
◇	.300	RUD-U	.000	RUD-L	.000
□	.500	ELV-1B	.000	ELV-0B	3.000
△	.600	S1-2	.000	S3-4	.000
▽	.700	S5-6	.000		

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

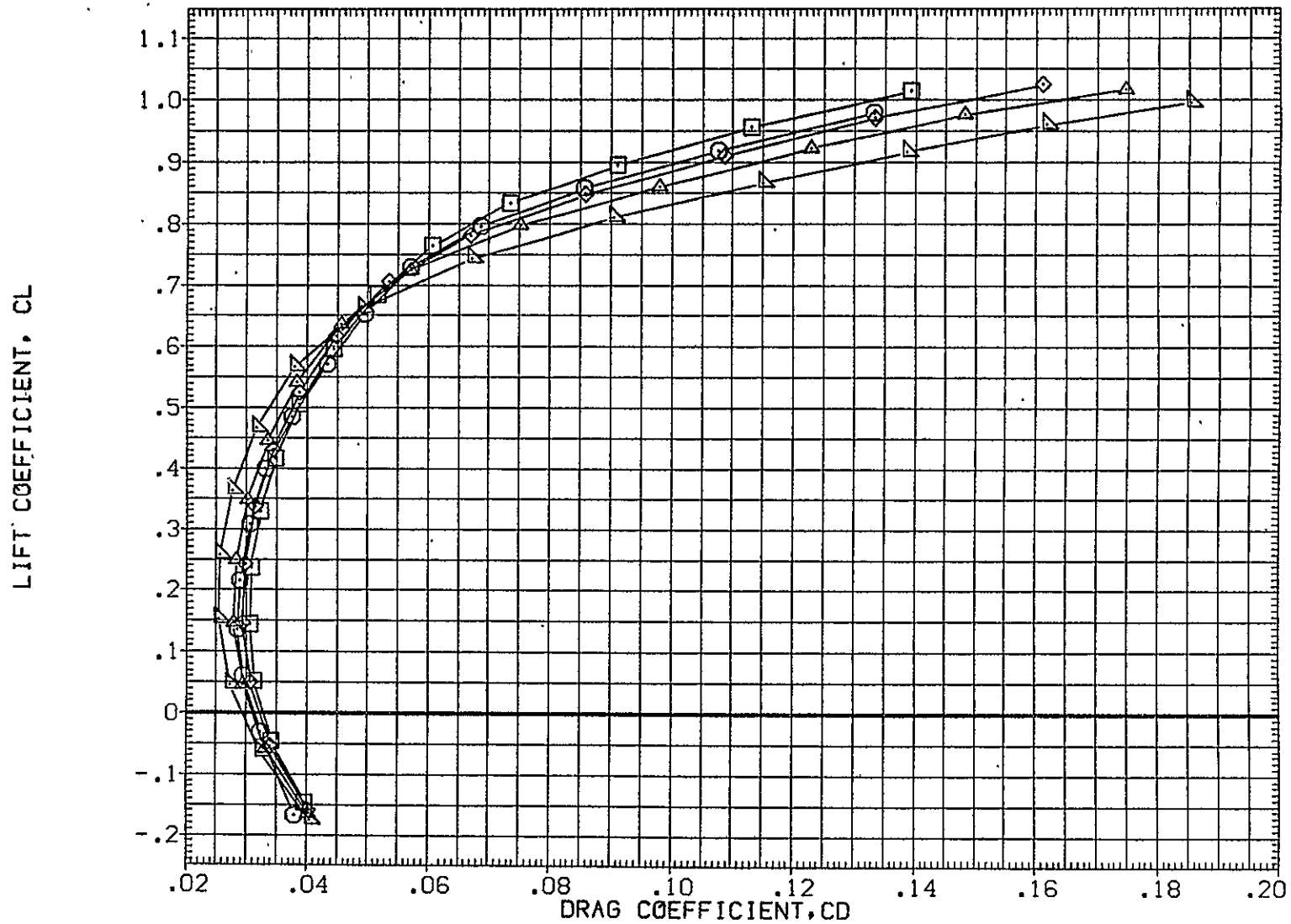


FIG. 4 747 ALONE+TIP FINS FLAPS UP, TAIL ON(S=+1)

BTWT-1431CA5 K1 FO H15.6 V9.1

(RGM044)

SYMBOL	MACH	PARAMETRIC VALUES			
○	.150	BETA	.000	STAB	1.000
□	.300	RUD-U	.000	RUD-L	.000
◇	.500	ELV-1B	.000	ELV-0B	3.000
△	.600	S1-2	.000	S3-4	.000
▽	.700	S5-6	.000		

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

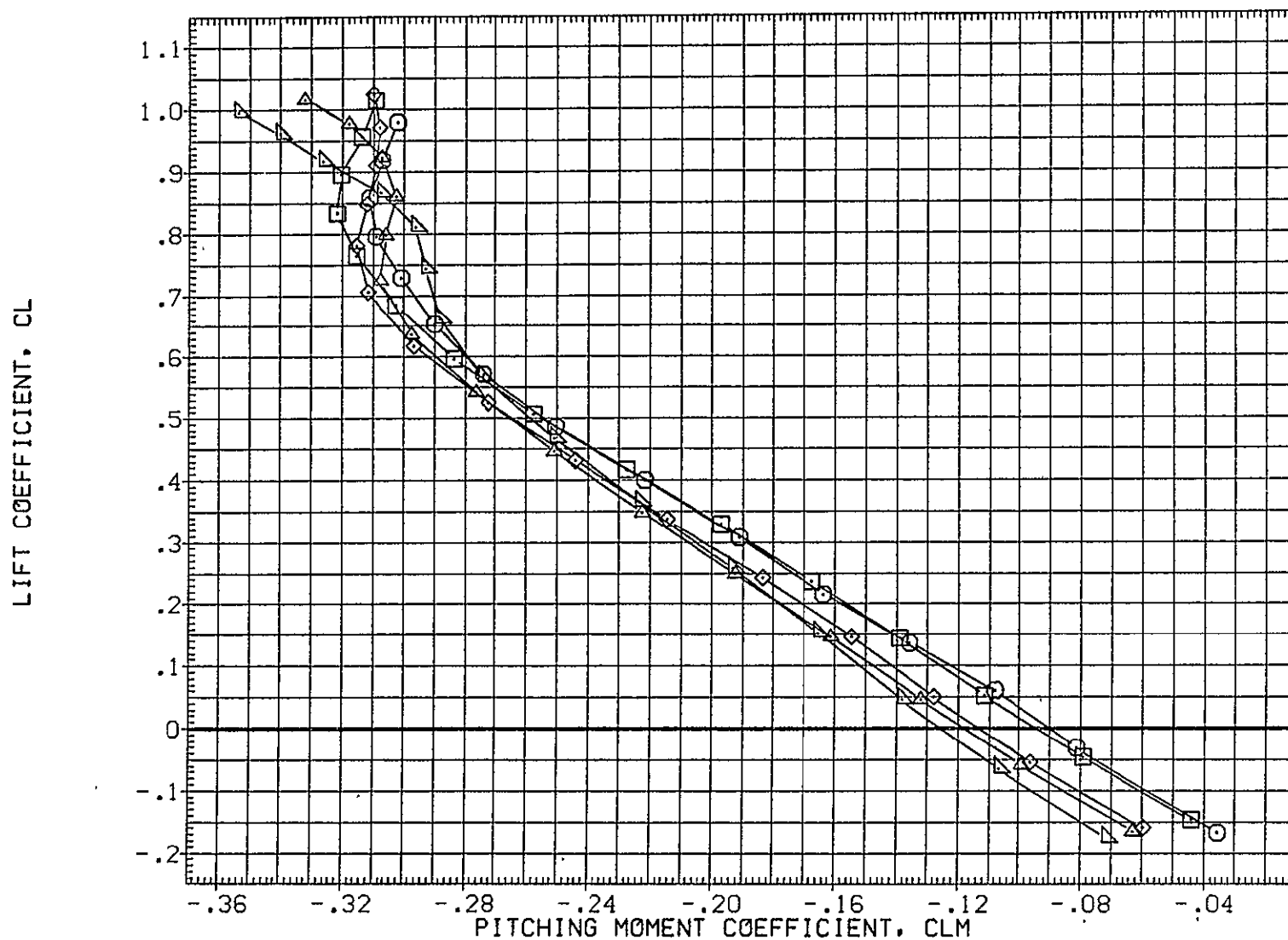


FIG. 4 747 ALONE+TIP FINS FLAPS UP, TAIL ON(S=+1)

SYMBOL	MACH	PARAMETRIC VALUES			
○	.150	BETA	.000	STAB	1.000
◇	.300	RUD-U	.000	RUD-L	.000
□	.500	ELV-1B	.000	ELV-0B	3.000
△	.600	S1-2	.000	S3-4	.000
▽	.700	S5-6	.000		

REFERENCE INFORMATION		
SREF	5500.0000	50.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

CARRIER FRL ANGLE OF ATTACK, ALPHA, DEG.

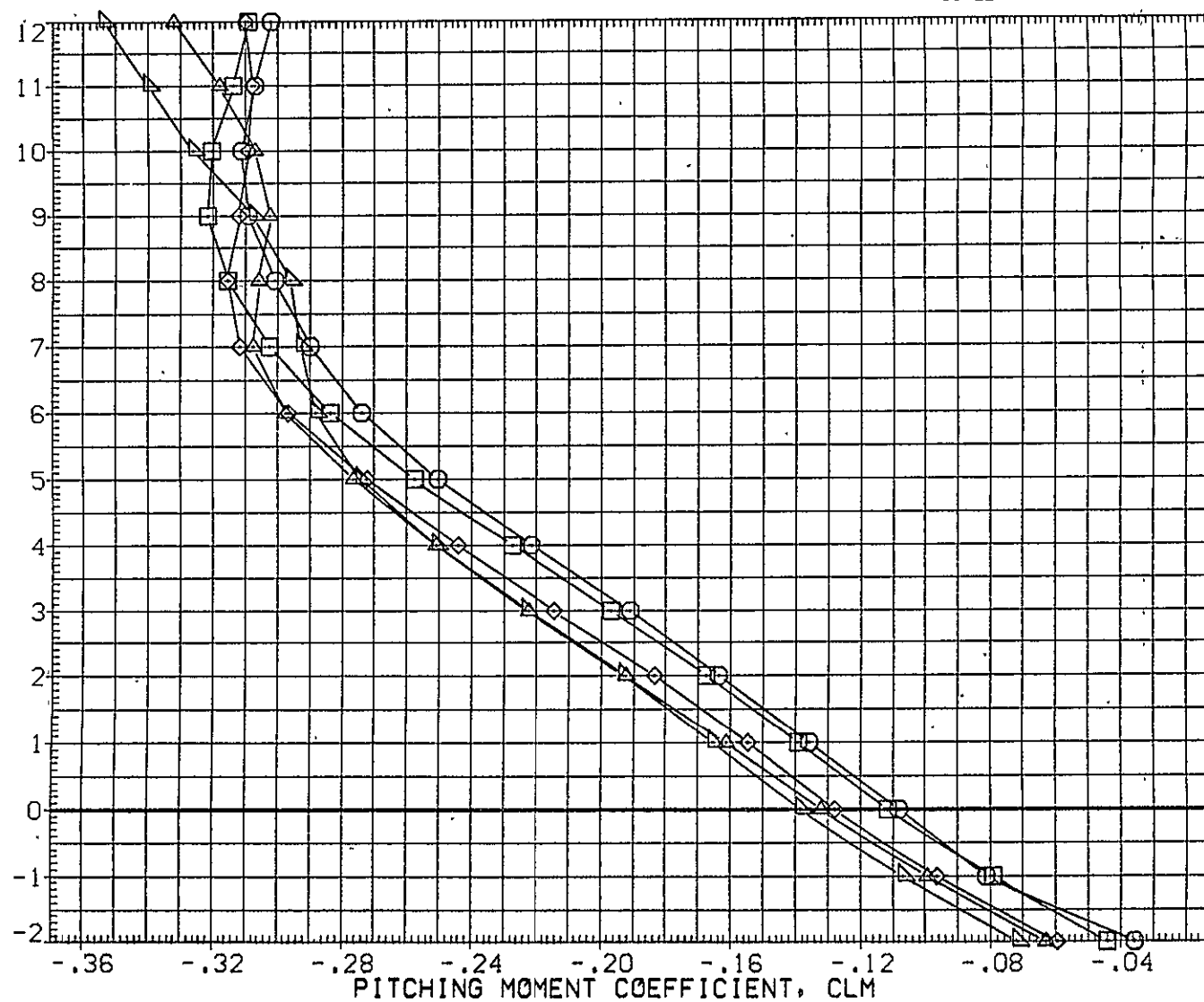


FIG. 4 747 ALONE+TIP FINS FLAPS UP, TAIL ON(S=+1)

BTWT-1431CA5 K1 F0 H15.6 V9.1

(RGM045)

SYMBOL	MACH	PARAMETRIC VALUES				REFERENCE INFORMATION		
○	.500	BETA	.000	STAB	1.000	SREF	5500.0000	SQ.FT.
□	.600	RUD-U	.000	RUD-L	.000	LREF	327.8000	IN.
		ELV-1B	.000	ELV-0B	3.000	BREF	2348.0000	IN.
		S1-2	.000	S3-4	45.000	XMRP	1339.9100	IN. XC
		S5-6	20.000			YMRP	.0000	IN. YC
						ZMRP	190.7500	IN. ZC
						SCALE	.0300	

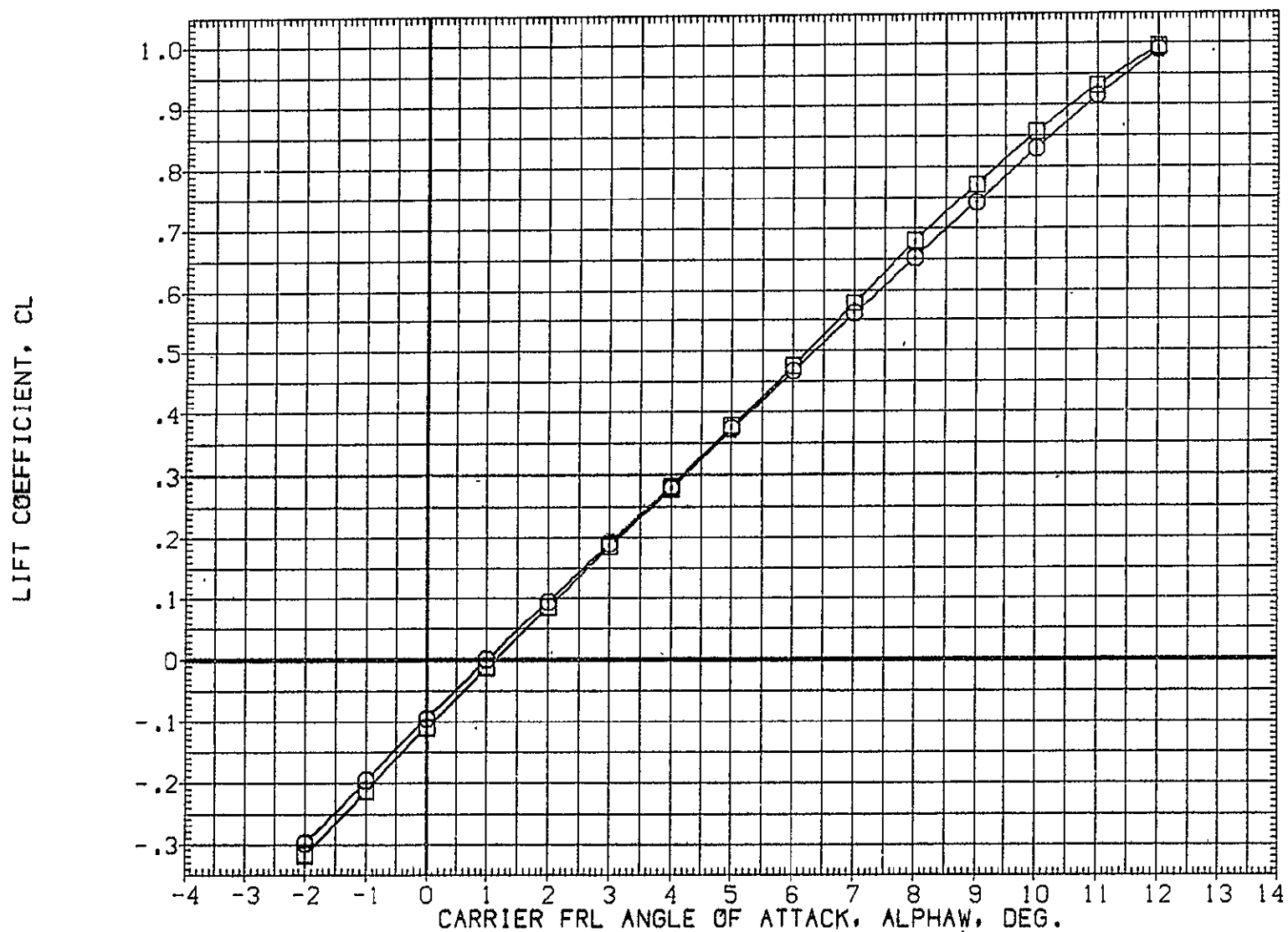


FIG. 5 747 ALONE+TIP FINS+STD SPD BRAKES FLAPS UP, TAIL ON(S=+1)

SYMBOL	MACH	PARAMETRIC VALUES			
○	.500	BETA	.000	STAB	1.000
□	.600	RUD-U	.000	RUD-L	.000
		ELV-1B	.000	ELV-0B	3.000
		S1-2	.000	S3-4	45.000
		S5-6	20.000		

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XM RP	1339.9100	IN. XC
YM RP	.0000	IN. YC
ZM RP	190.7500	IN. ZC
SCALE	.0300	

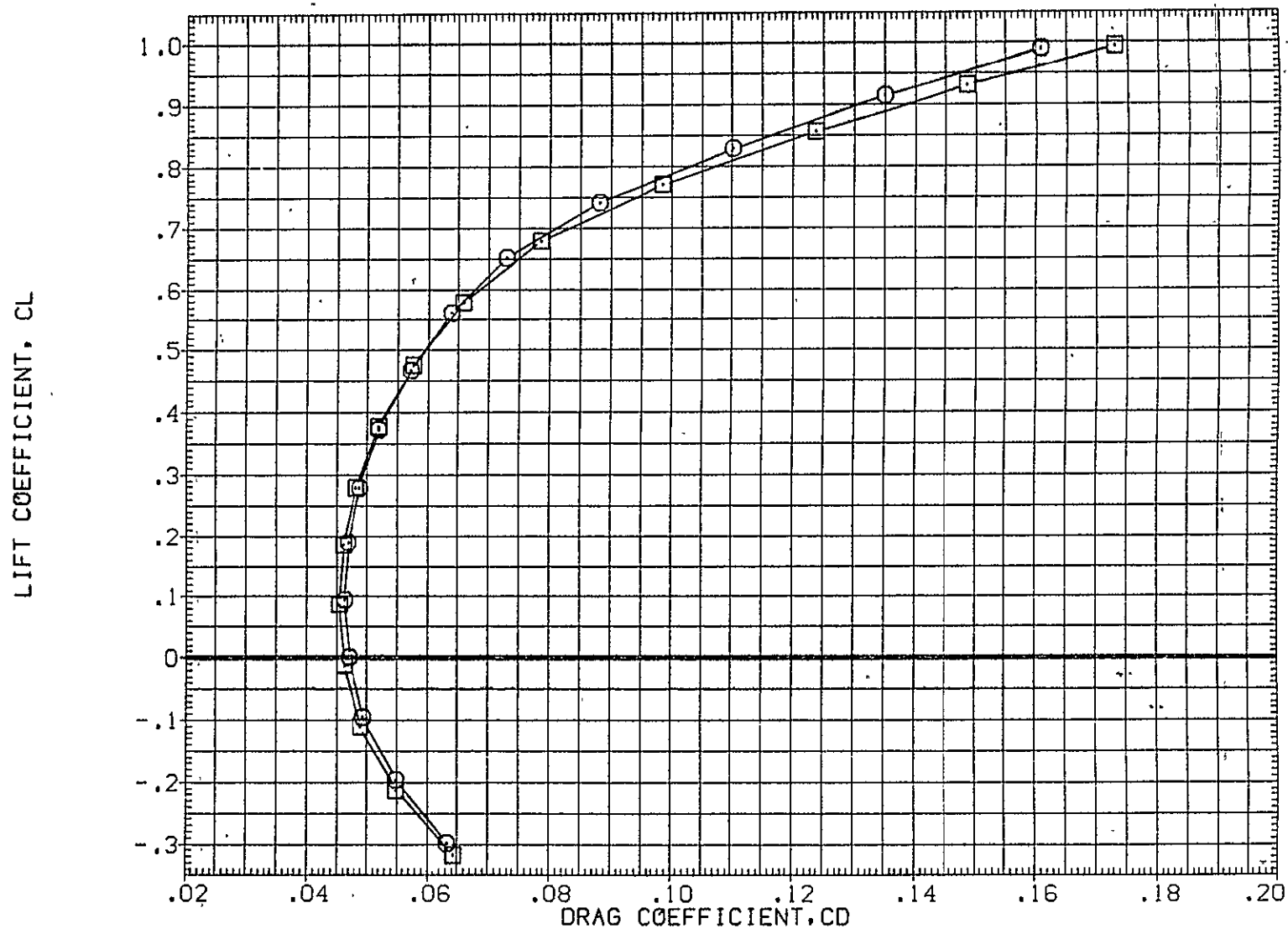


FIG. 5 747 ALONE+TIP FINS+STD SPD BRAKES FLAPS UP, TAIL ON(S=+1)

.BTWT-1431CA5 K1 FO H15.6 V9.1

(RGM045)

SYMBOL	MACH	PARAMETRIC VALUES			
○	.500	BETA	.000	STAB	1.000
□	.600	RUD-U	.000	RUD-L	.000
		ELV-1B	.000	ELV-0B	3.000
		S1-2	.000	S3-4	45.000
		S5-6	-20.000		

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

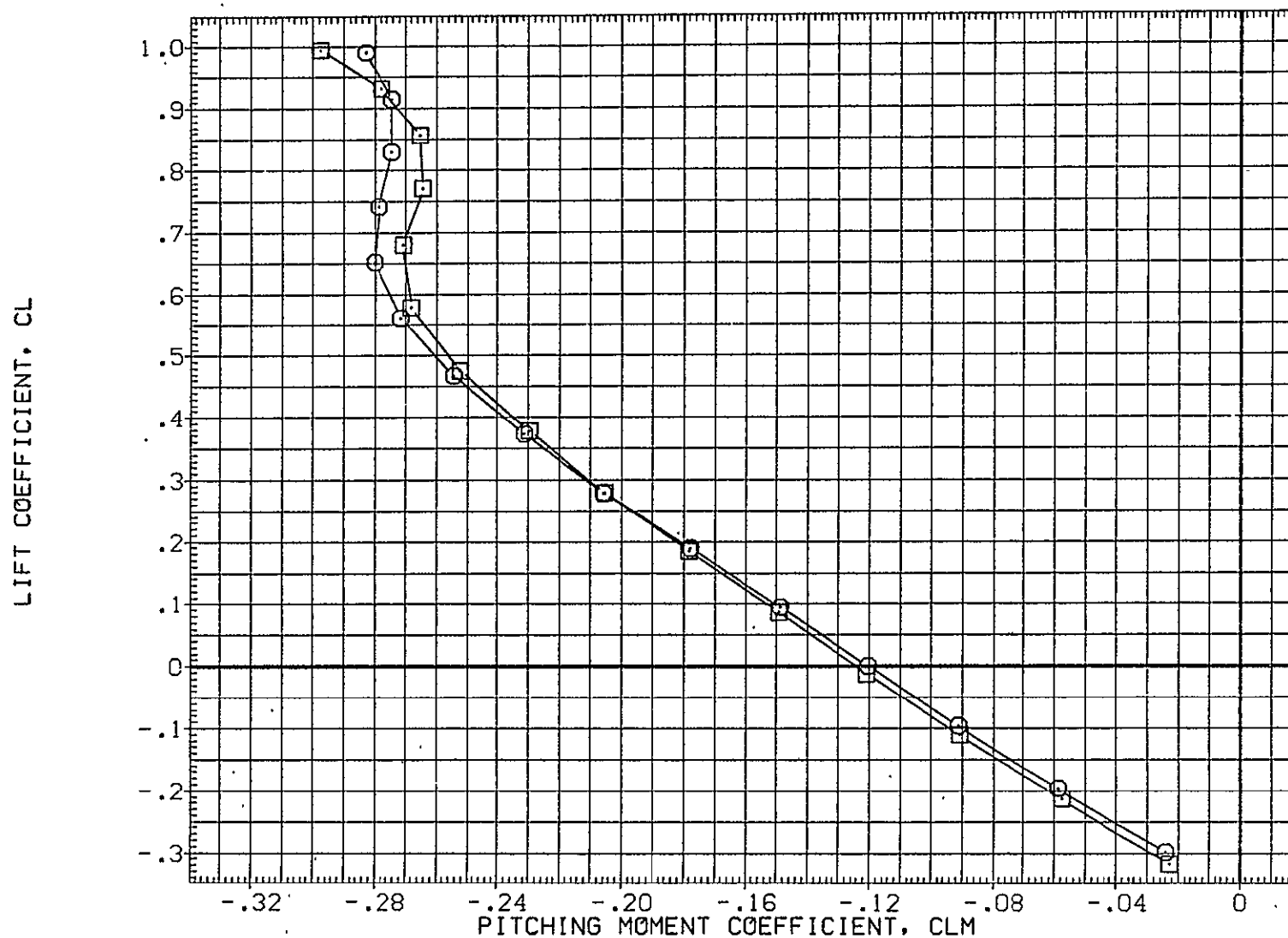


FIG. 5 747 ALONE+TIP FINS+STD SPD BRAKES FLAPS UP, TAIL ON(S=+1)

SYMBOL	MACH	PARAMETRIC VALUES			
○	.500	BETA	.000	STAB	1.000
□	.600	RUD-U	.000	RUD-L	.000
		ELV-IB	.000	ELV-OB	3.000
		S1-2	.000	S3-4	45.000
		S5-6	20.000		

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

CARRIER FRL ANGLE OF ATTACK, ALPHA, DEG.

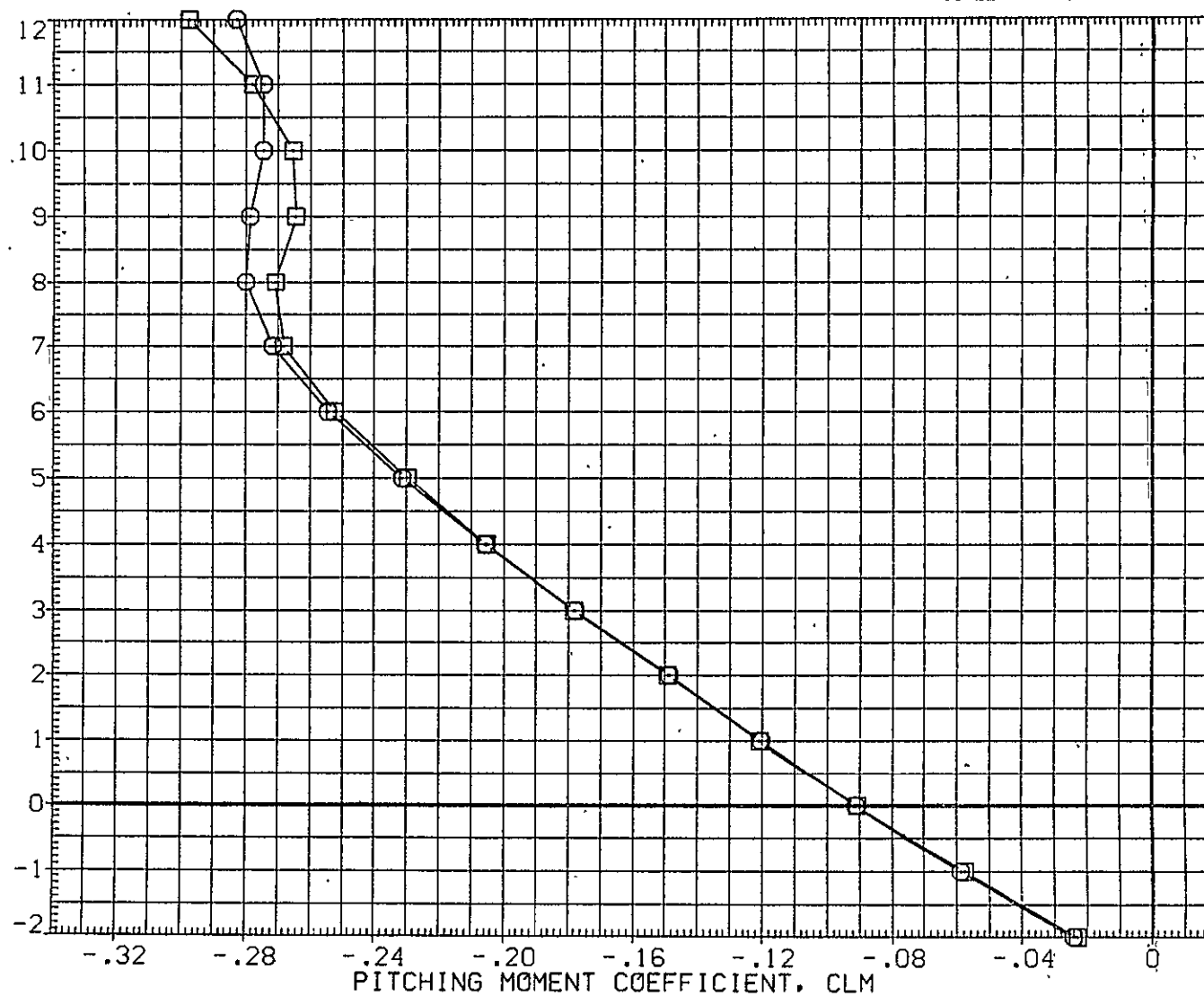


FIG. 5 747 ALONE+TIP FINS+STD SPD BRAKES FLAPS UP, TAIL ON(S=+1)

BTWT-1431CA5 K1 FO H15.6 V9.1

(RGM054)

SYMBOL	MACH	PARAMETRIC VALUES				REFERENCE INFORMATION		
○	.499	BETA	.000	STAB	-1.900	SREF	5500.0000	50.FT.
□	.600	RUD-U	.000	RUD-L	.000	LREF	327.8000	IN.
		ELV-1B	.000	ELV-0B	3.000	BREF	2348.0000	IN.
		S1-2	.000	S3-4	45.000	XMRP	1339.9100	IN. XC
		S5-6	20.000			YMRP	.0000	IN. YC
						ZMRP	190.7500	IN. ZC
						SCALE	.0300	

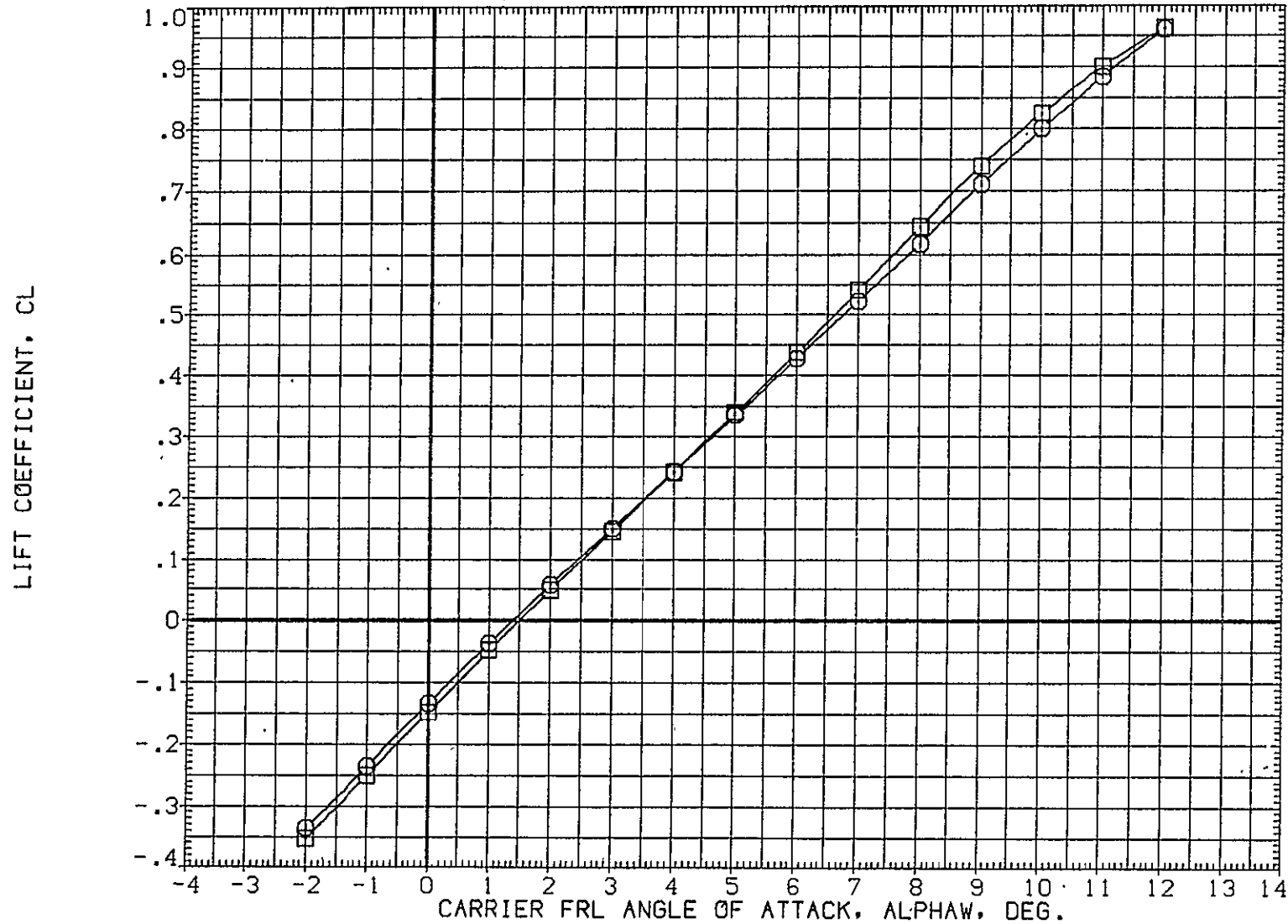


FIG. 6 747 ALONE+TIP FINS+STD SPD BRAKES FLAPS UP, TAIL ON(S=-2)

SYMBOL	MACH	PARAMETRIC VALUES				REFERENCE INFORMATION		
○	.499	BETA	.000	STAB	-1.900	SREF	5500.0000	SQ.FT.
□	.600	RUD-U	.000	RUD-L	.000	LREF	327.8000	IN.
		ELV-1B	.000	ELV-0B	3.000	BREF	2348.0000	IN.
		S1-2	.000	S3-4	45.000	XMRP	1339.9100	IN. XC
		S5-6	20.000			YMRP	.0000	IN. YC
						ZMRP	190.7500	IN. ZC
						SCALE	.0300	

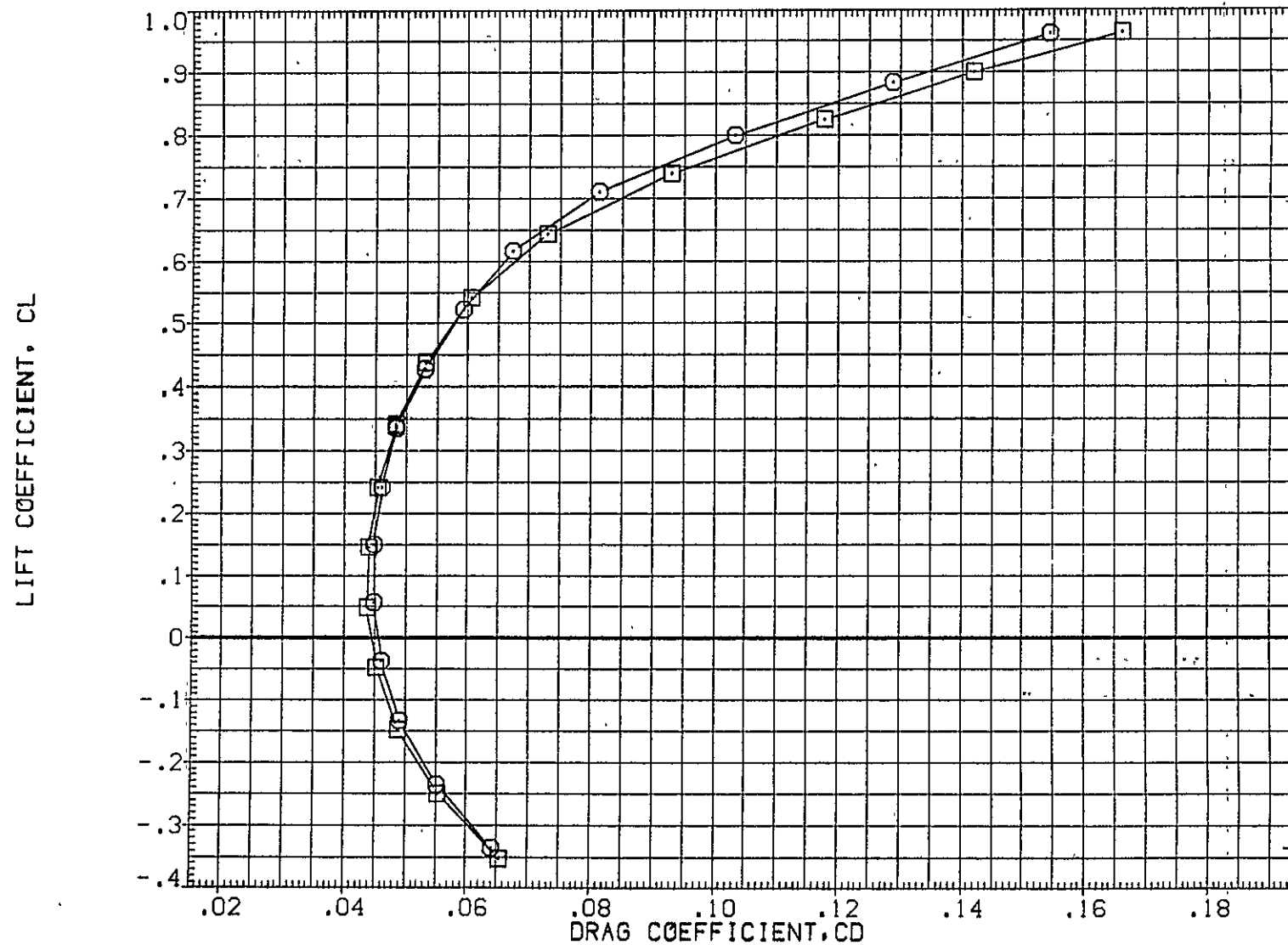


FIG. 6 747 ALONE+TIP FINS+STD SPD BRAKES FLAPS UP, TAIL ON(S=-2)

BTWT-1431CA5 K1 F0 H15.6 V9.1

(RGM054)

SYMBOL	MACH	PARAMETRIC VALUES				REFERENCE INFORMATION		
○	.499	BETA	.000	STAB	-1.900	SREF	5500.0000	SQ.FT.
□	.600	RUD-U	.000	RUD-L	.000	LREF	327.8000	IN.
		ELV-1B	.000	ELV-0B	3.000	BREF	2348.0000	IN.
		S1-2	.000	S3-4	45.000	XMRP	1339.9100	IN. XC
		S5-6	20.000			YMRP	.0000	IN. YC
						ZMRP	190.7500	IN. ZC
						SCALE	.0300	



FIG. 6 747 ALONE+TIP FINS+STD SPD BRAKES FLAPS UP, TAIL ON(S=-2)

SYMBOL	MACH	PARAMETRIC VALUES			
○	.499	BETA	.000	STAB	-1.900
□	.600	RUD-U	.000	RUD-L	.000
		ELV-IB	.000	ELV-OB	3.000
		S1-2	.000	S3-4	45.000
		S5-6	20.000		

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

CARRIER FRL ANGLE OF ATTACK, ALPHA, DEG.

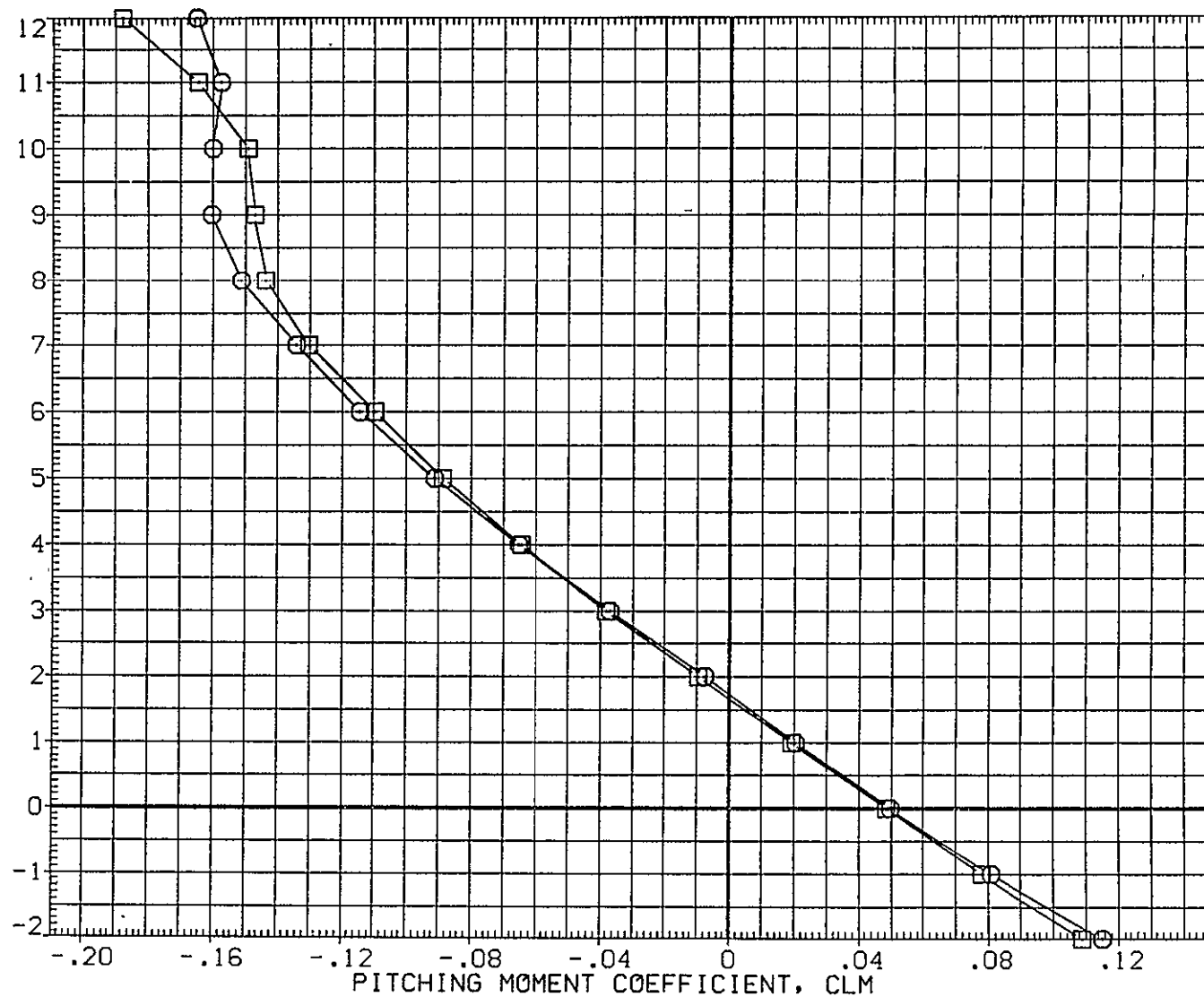


FIG. 6 747 ALONE+TIP FINS+STD SPD BRAKES FLAPS UP, TAIL ON(S=-2)

BTWT-1431CA5 K1 FO H15.6 V9.1 AT38 AT39

(RGM052)

SYMBOL	MACH	PARAMETRIC VALUES			
○	.300	BETA	.000	STAB	1.000
□	.500	RUD-U	.000	RUD-L	.000
◇	.600	ELV-1B	.000	ELV-0B	3.000
△	.700	S1-2	.000	S3-4	45.000
		S5-6	20.000		

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

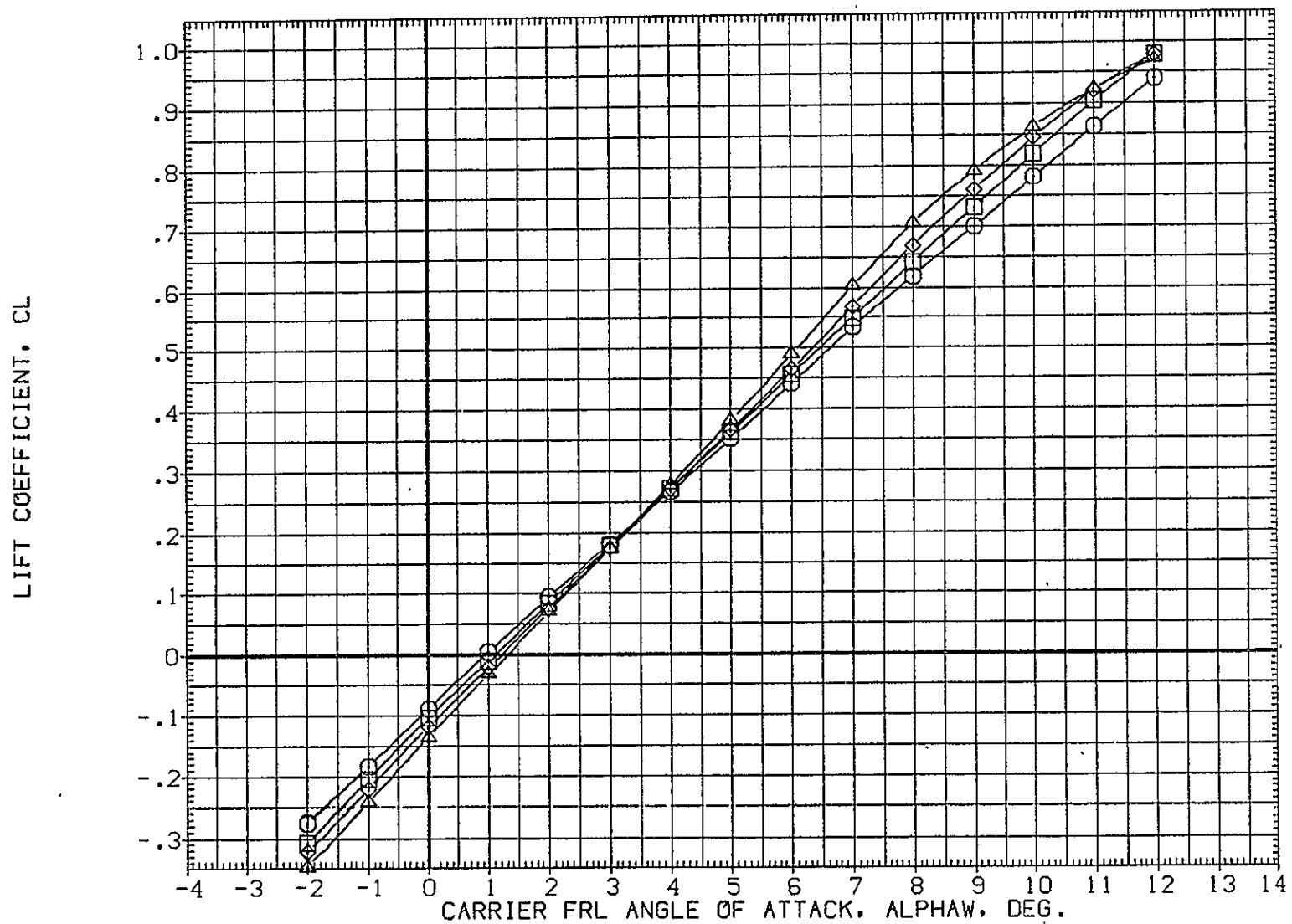


FIG. 7 747 ALONE+TIP FINS+STD SPD BRAKES+ORB SUPPORTS STRUTS(L0)

SYMBOL	MACH	PARAMETRIC VALUES
○	.300	BETA .000 STAB 1.000
□	.500	RUD-U .000 RUD-L .000
◇	.600	ELV-1B .000 ELV-0B 3.000
△	.700	S1-2 .000 S3-4 45.000
		SS-6 20.000

REFERENCE INFORMATION		
SREF	5500.0000	50.FT.
LREF	327.8000	IN.
BREF	2349.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

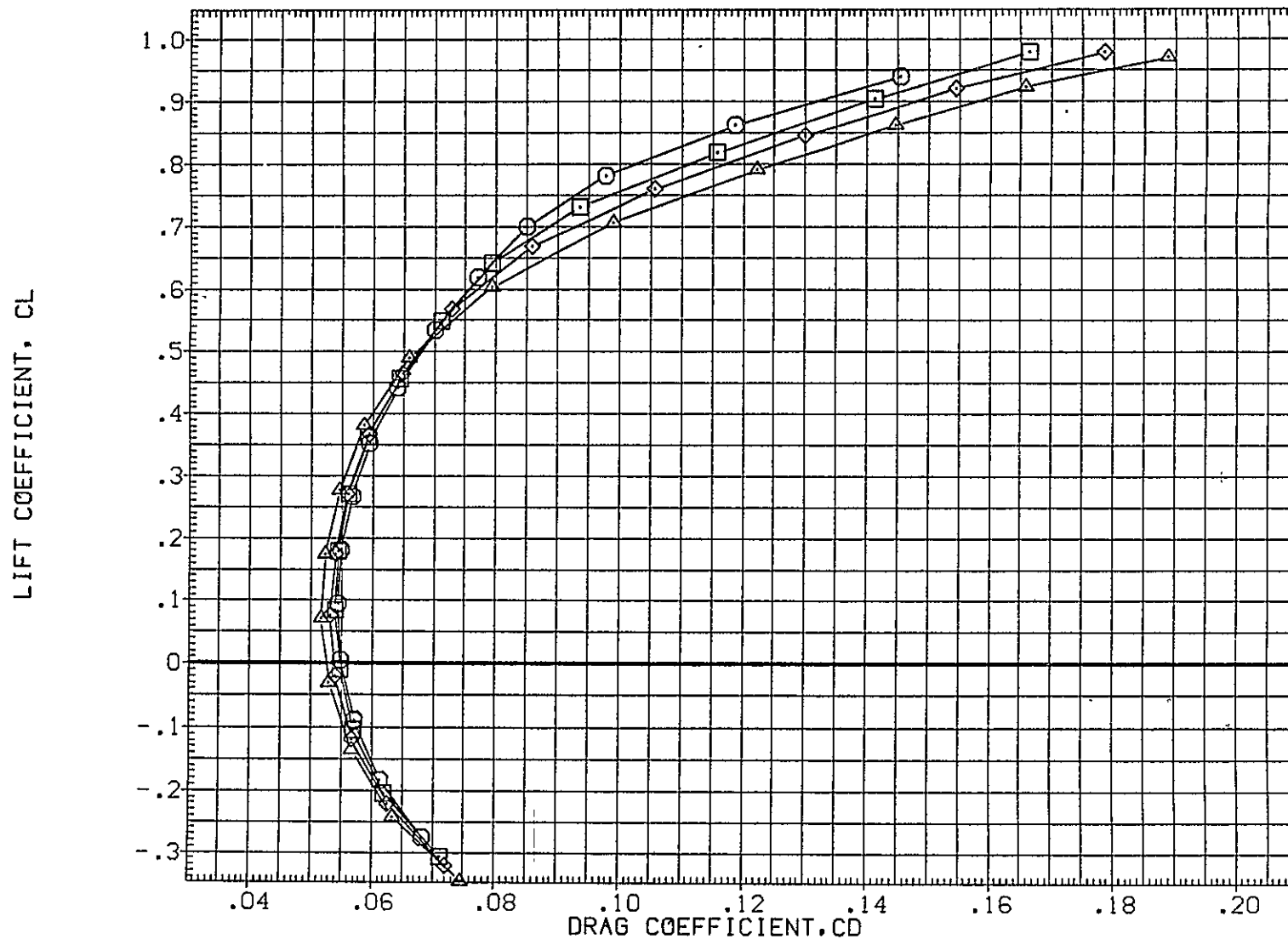


FIG. 7 : 747 ALONE+TIP FINS+STD SPD BRAKES+ORB SUPPORTS STRUTS(C0)

BTWT-1431CA5 K1 FO H15.6 V9.1 AT38 AT39

(RGM052)

SYMBOL	MACH	PARAMETRIC VALUES			
○	.300	BETA	.000	STAB	1.000
□	.500	RUD-U	.000	RUD-L	.000
◇	.600	ELV-1B	.000	ELV-0B	3.000
△	.700	S1-2	.000	S3-4	45.000
		S5-6	20.000		

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

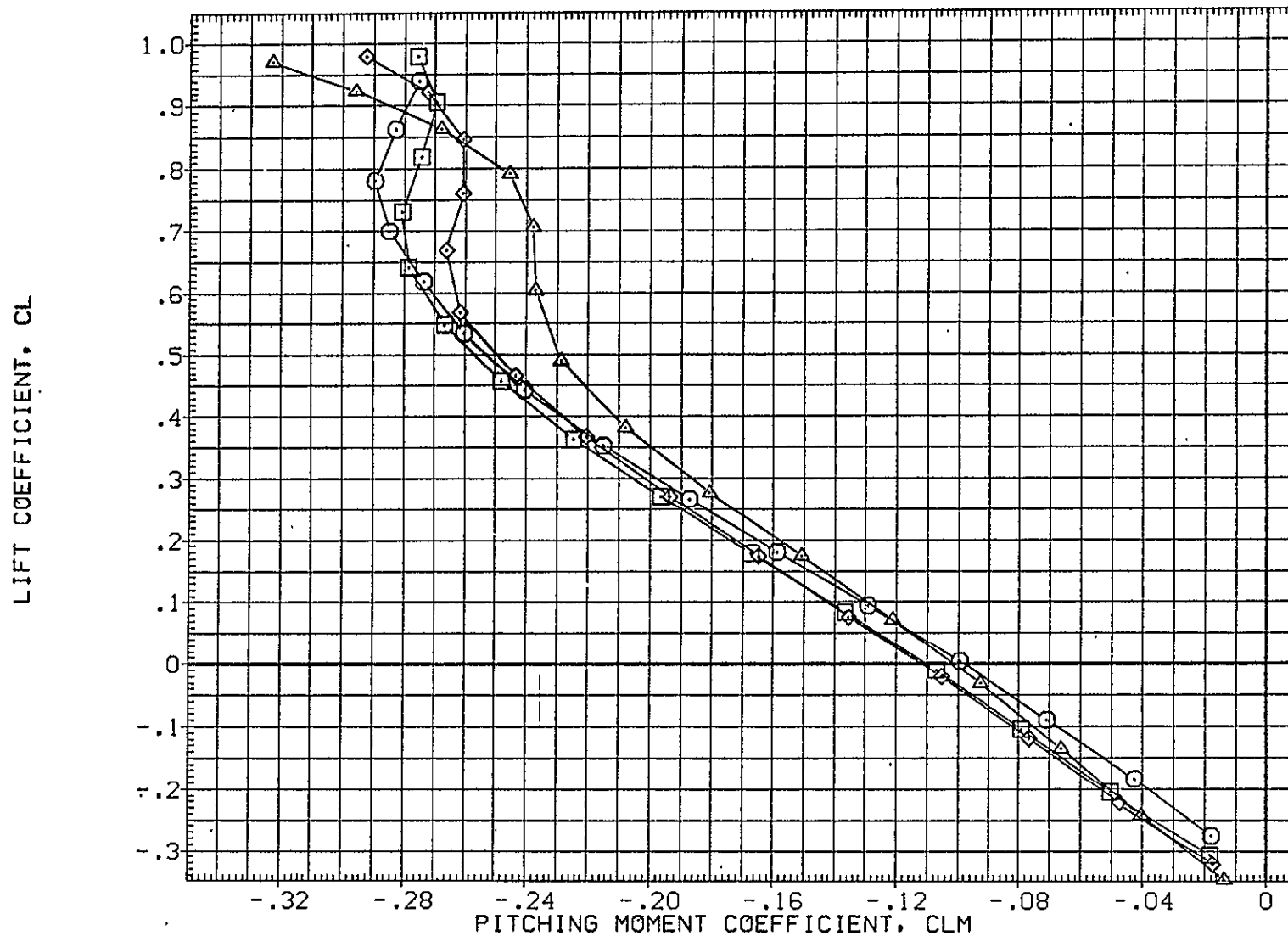


FIG. 7 747 ALONE+TIP FINS+STD SPD BRAKES+ORB SUPPORTS STRUTS(L0)

SYMBOL	MACH	PARAMETRIC VALUES				REFERENCE INFORMATION		
		BETA	.000	STAB	1.000	SREF	5500.0000	50. FT.
○	.300	RUD-U	.000	RUD-L	.000	LREF	327.8000	IN.
□	.500	ELV-1B	.000	ELV-0B	3.000	BREF	2348.0000	IN.
◇	.600	S1-2	.000	S3-4	45.000	XM RP	1339.9100	IN. XC
△	.700	S5-6	20.000			YM RP	.0000	IN. YC
						ZM RP	190.7500	IN. ZC
						SCALE	.0300	

CARRIER FRL ANGLE OF ATTACK, ALPHA, DEG.

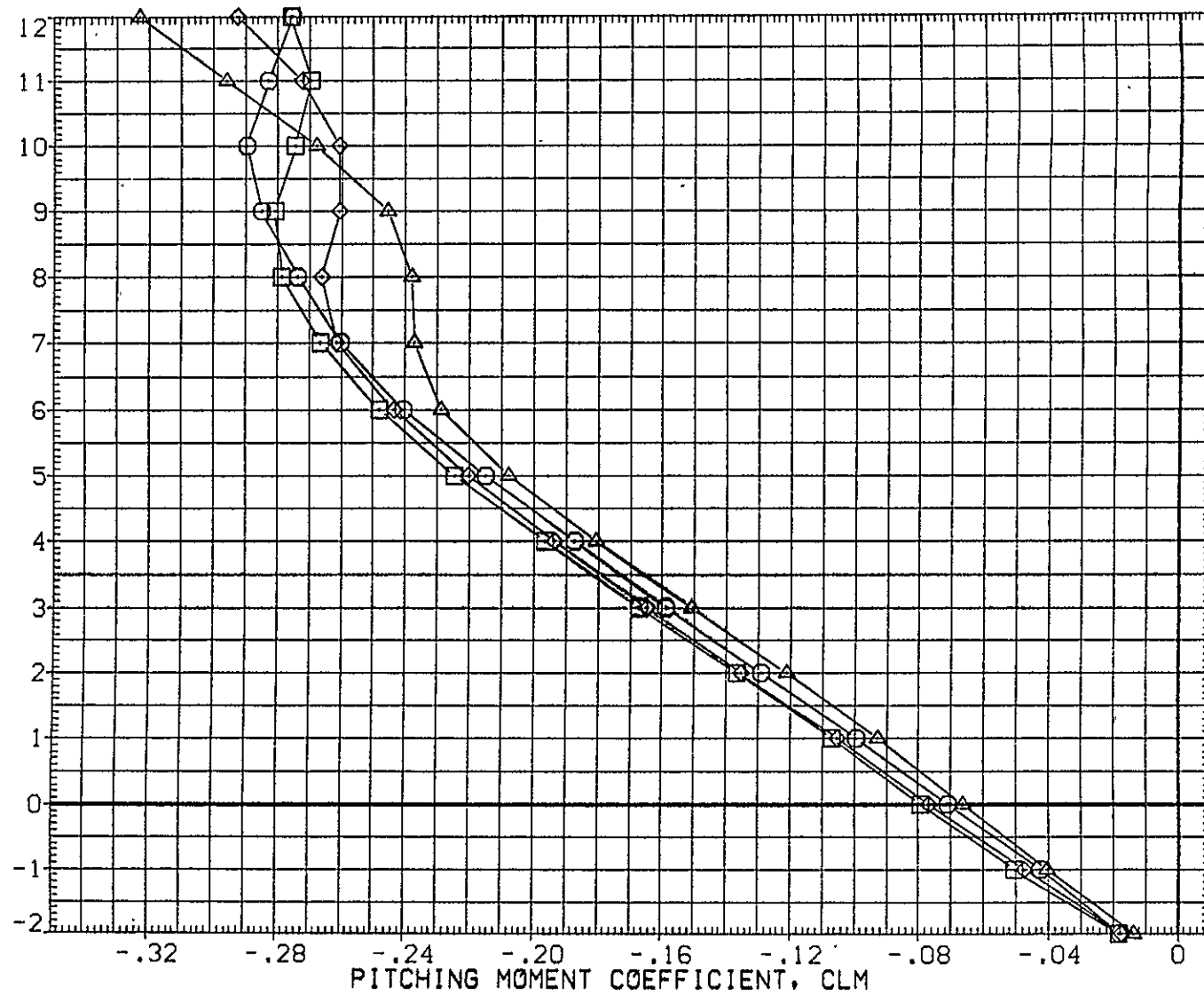


FIG. 7 747 ALONE+TIP FINS+STD SPD BRAKES+ORB SUPPORTS STRUTS(L0)

BTWT-1431CA5 K1 FO H15.6 V9.1 AT38.1 AT39

(RGM053)

SYMBOL	MACH	PARAMETRIC VALUES			
○	.300	BETA	.000	STAB	1.000
□	.500	RUD-U	.000	RUD-L	.000
◇	.599	ELV-1B	.000	ELV-0B	3.000
△	.700	S1-2	.000	S3-4	45.000
		S5-6	20.000		

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

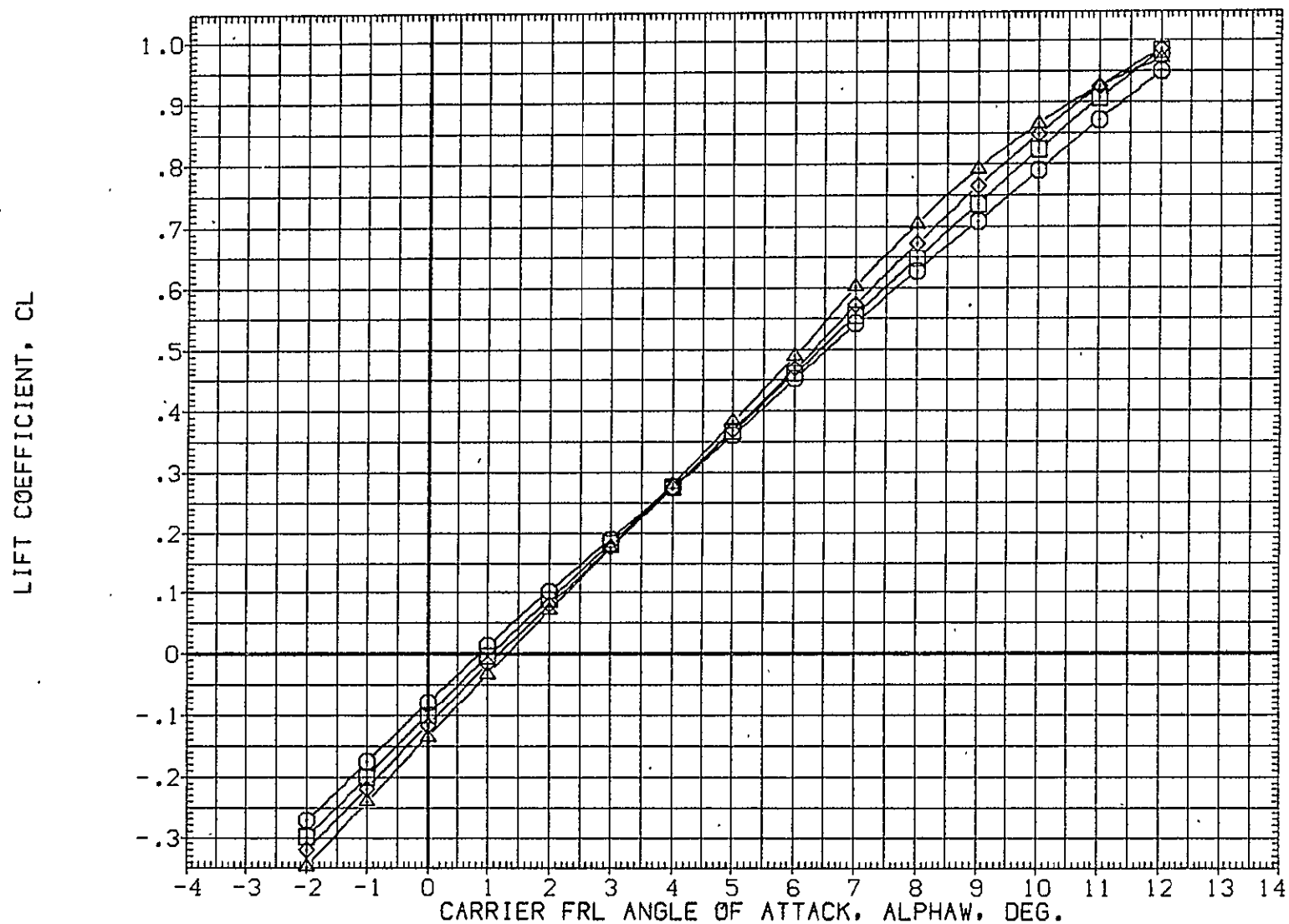


FIG. 8 747 ALONE+TIP FINS+STD SPD BRAKES+ORB SUPPORTS STRUTS(HI)

SYMBOL	MACH	PARAMETRIC VALUES			
○	.300	BETA	.000	STAB	1.000
□	.500	RUD-U	.000	RUD-L	.000
◇	.599	ELV-1B	.000	ELV-0B	3.000
△	.700	S1-2	.000	S3-4	45.000
		S5-6	20.000		

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

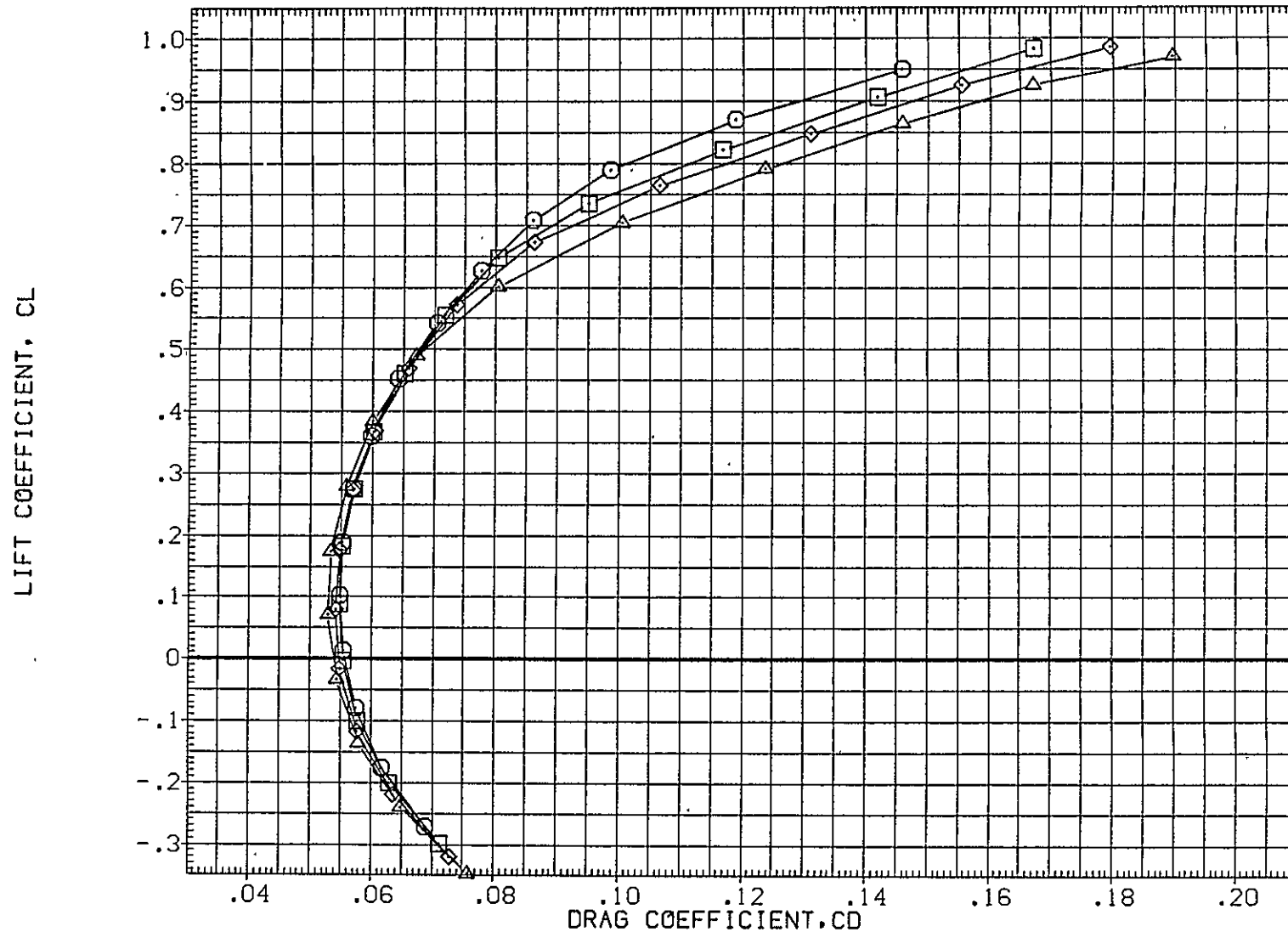


FIG. 8 747 ALONE+TIP FINS+STD SPD BRAKES+ORB SUPPORTS STRUTS(HI)

BTWT-1431CA5 K1 FO H15.6 V9.1 AT38.1 AT39

(RGM053)

SYMBOL	MACH	PARAMETRIC VALUES			
○	.300	BETA	.000	STAB	1.000
□	.500	RUD-U	.000	RUD-L	.000
◇	.599	ELV-1B	.000	ELV-0B	3.000
△	.700	S1-2	.000	S3-4	45.000
		S5-6	20.000		

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

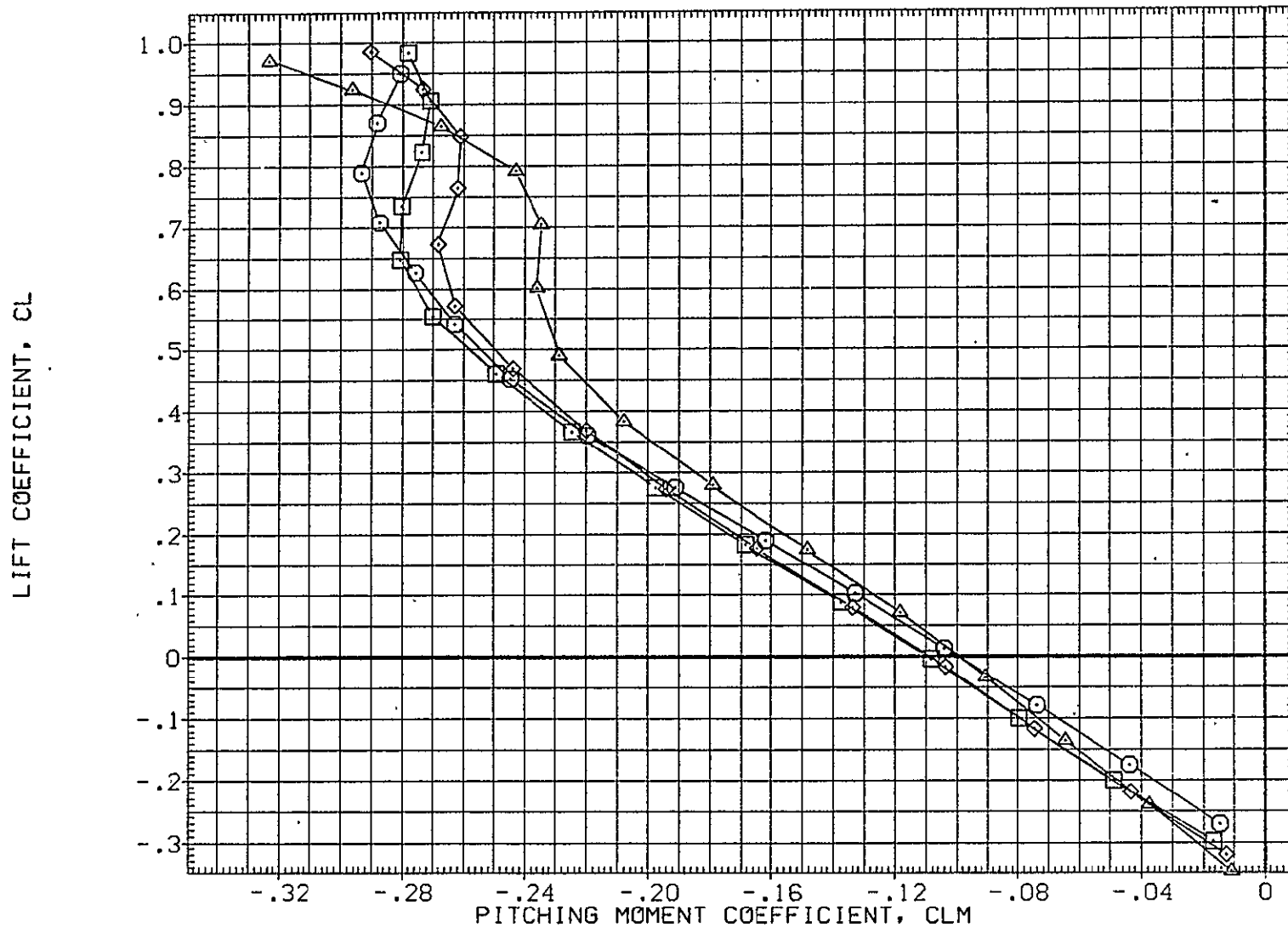


FIG. 8 747 ALONE+TIP FINS+STD SPD BRAKES+ORB SUPPORTS STRUTS(HI)

SYMBOL	MACH	PARAMETRIC VALUES			
○	.300	BETA	.000	STAB	1.000
□	.500	RUD-U	.000	RUD-L	.000
◇	.599	ELV-1B	.000	ELV-0B	3.000
△	.700	S1-2	.000	S3-4	45.000
		S5-6	20.000		

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

CARRIER FRL ANGLE OF ATTACK, ALPHA, DEG.

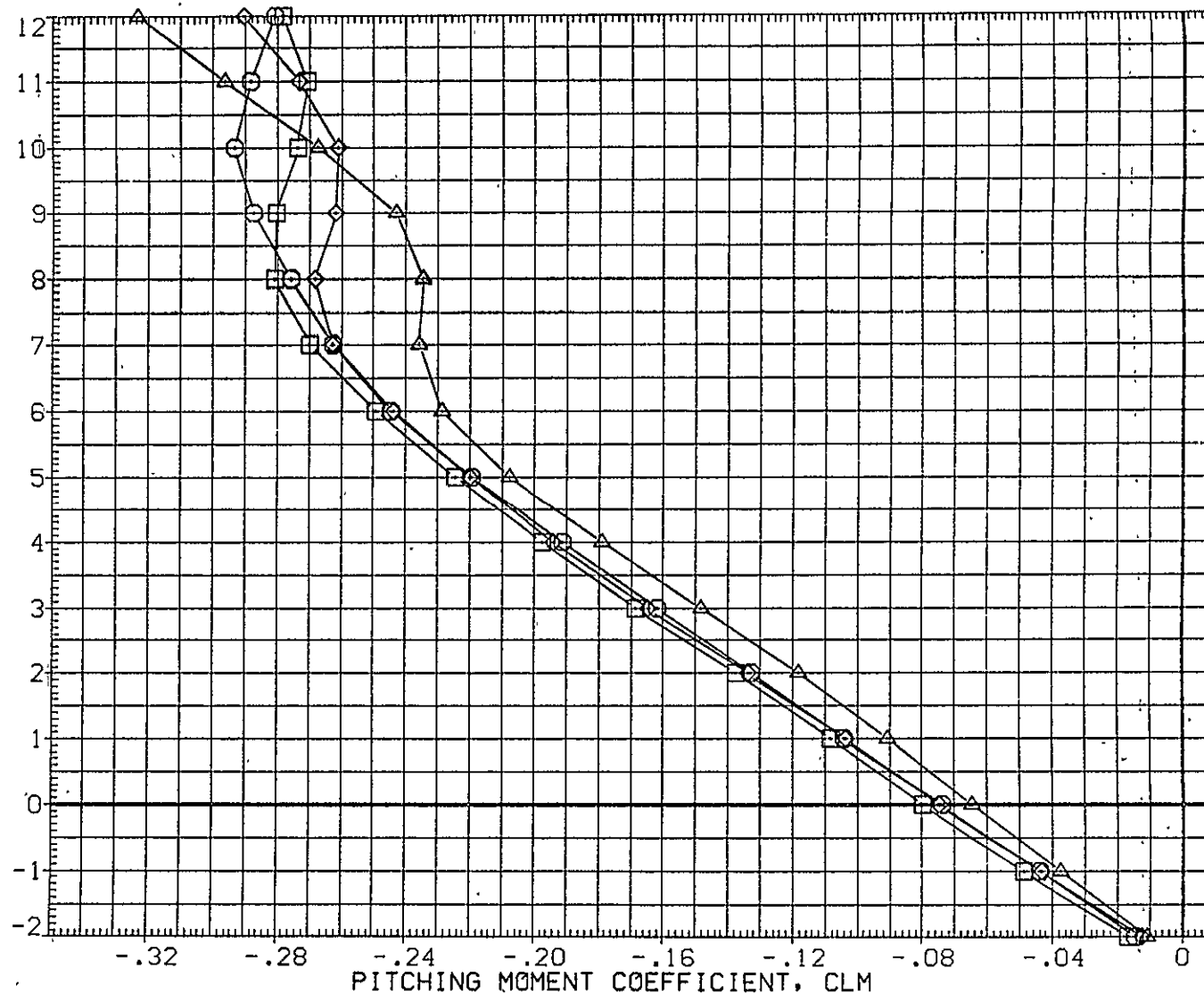


FIG. 8 747 ALONE+TIP FINS+STD SPD BRAKES+ORB SUPPORTS STRUTS(HI)

BTWT-1431CA5 K1 F20 H15.1A V9.1

(RGM058)

SYMBOL	MACH	PARAMETRIC VALUES			
○	.150	BETA	.000	STAB	1.000
□	.300	RUD-U	.000	RUD-L	.000
◇	.500	ELV-IB	.000	ELV-OB	3.000
△	.600	S1-2	.000	S3-4	.000
▽	.700	S5-6	.000		

REFERENCE INFORMATION		
SREF	.5500	SQ.FT.
LREF	.327	IN.
BREF	2348	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

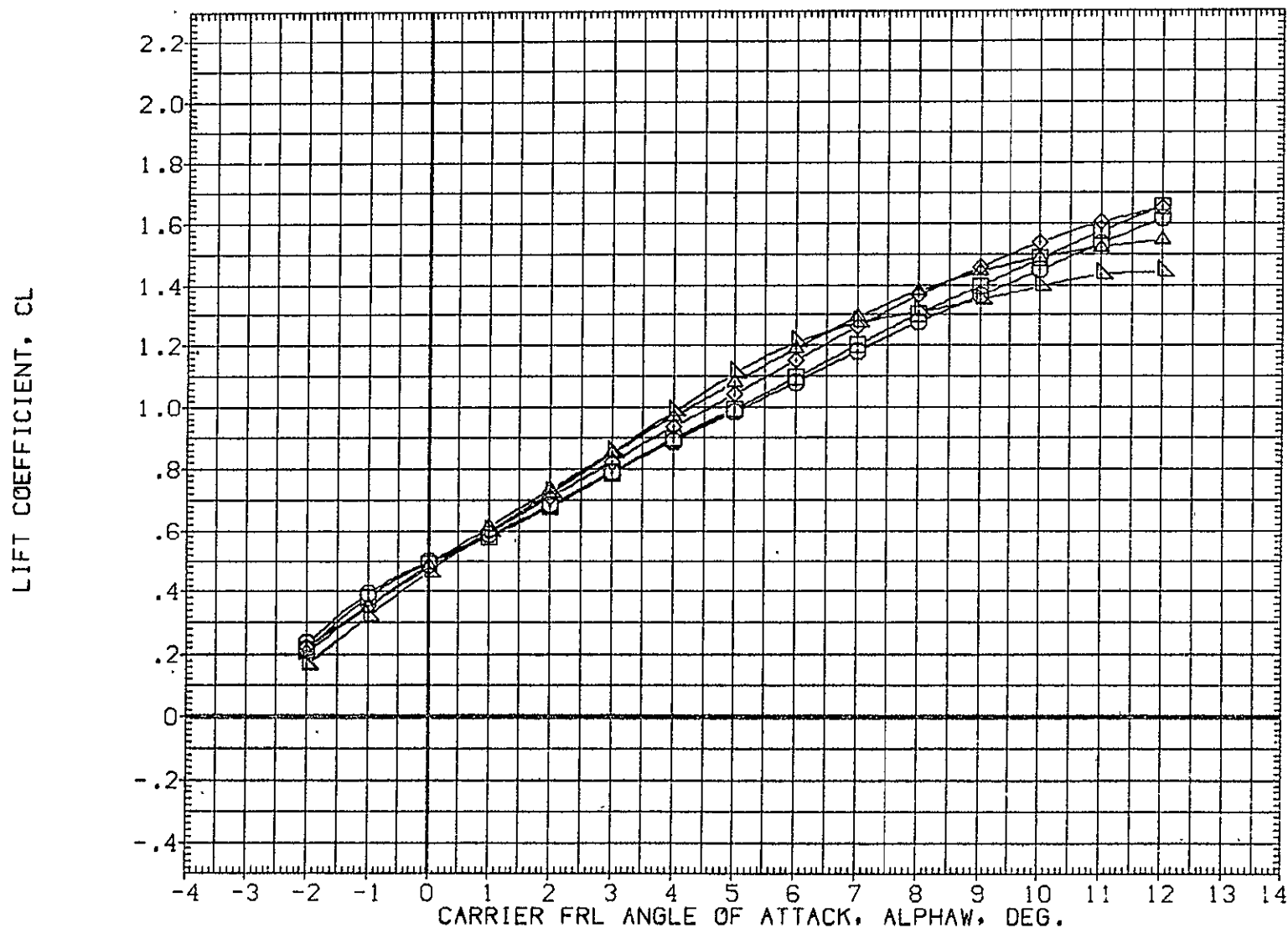


FIG. 9 747 ALONE, BASIC AIRPLANE FLAPS 20, TAIL ON(S=+1)

SYMBOL	MACH	PARAMETRIC VALUES			
○	.150	BETA	.000	STAB	1.000
□	.300	RUD-U	.000	RUD-L	.000
◇	.500	ELV-1B	.000	ELV-0B	3.000
△	.600	S1-2	.000	S3-4	.000
▽	.700	S5-6	.000		

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

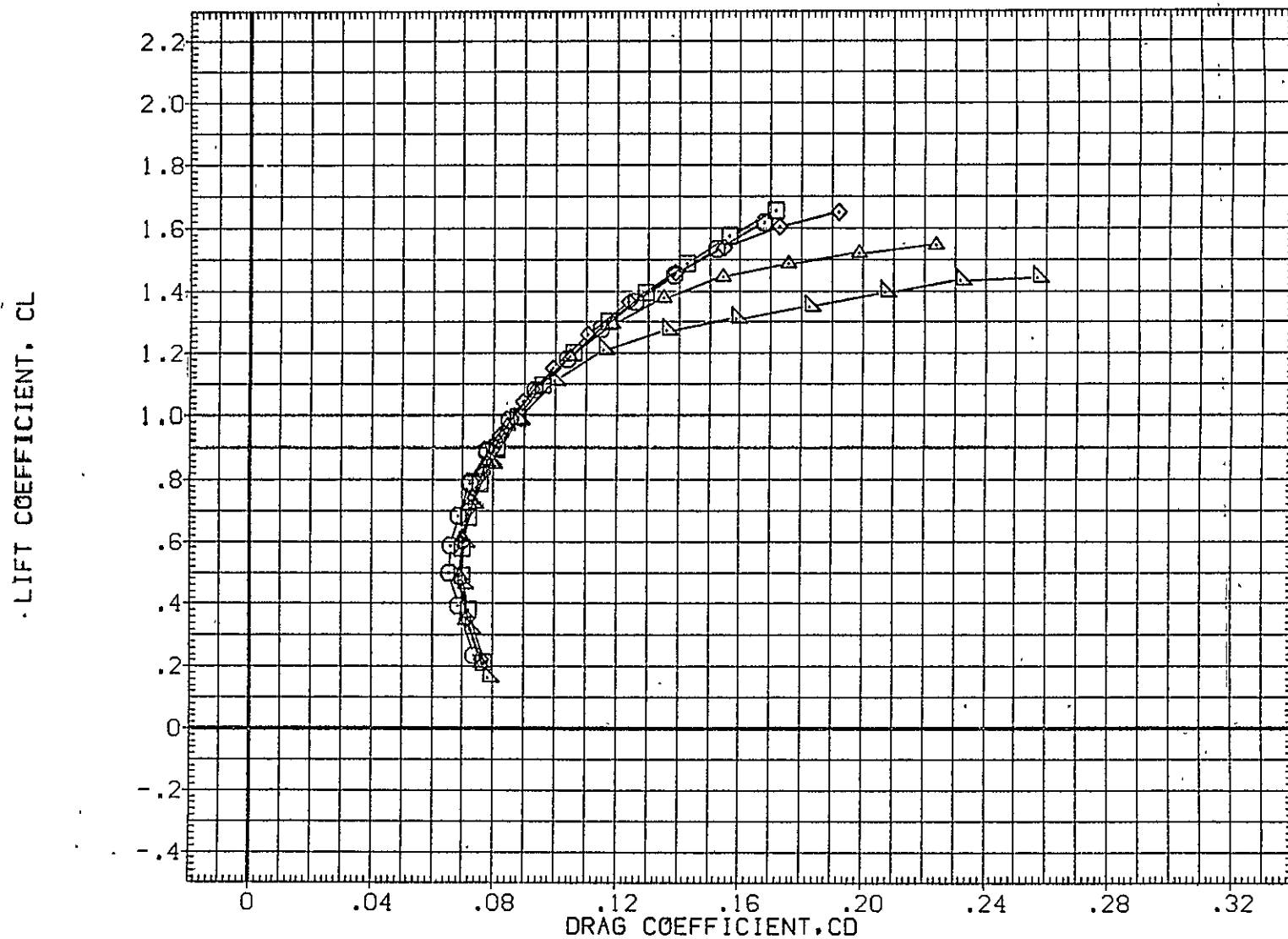


FIG. 9 747 ALONE, BASIC AIRPLANE FLAPS 20, TAIL ON(S=+1)

BTWT-1431CA5 K1 F20 H15.1A V9.1

(RGM058)

SYMBOL

○
□
◇
△
▽

MACH

BETA

PARAMETRIC VALUES

.000

STAB

1.000

RUD-U

.000

RUD-L

.000

ELV-IB

.000

ELV-OB

3.000

S1-2

.000

S3-4

.000

S5-6

.000

REFERENCE INFORMATION

SREF	5500.0000	SQ.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

LIFT COEFFICIENT, CL

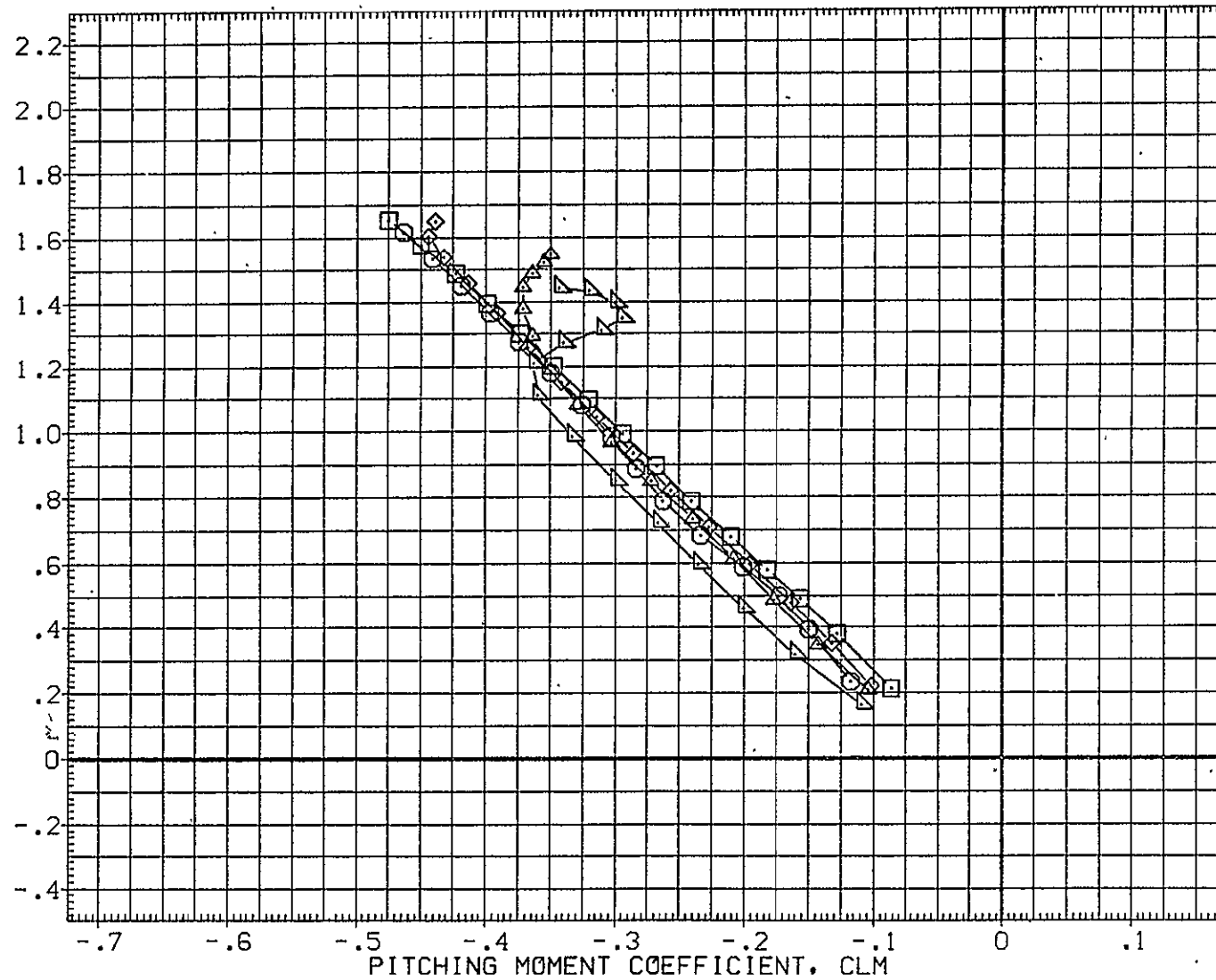


FIG. 9 747 ALONE, BASIC AIRPLANE FLAPS 20, TAIL ON(S=+1)

SYMBOL	MACH	PARAMETRIC VALUES				REFERENCE INFORMATION		
○	.150	BETA	.000	STAB	1.000	SREF	5500.0000	50.FT.
□	.300	RUD-U	.000	RUD-L	.000	LREF	327.8000	IN.
◇	.500	ELV-1B	.000	ELV-0B	3.000	BREF	2348.0000	IN.
△	.600	S1-2	.000	S3-4	.000	XMRP	1339.9100	IN. XC
▽	.700	S5-6	.000			YMRP	.0000	IN. YC
						ZMRP	190.7500	IN. ZC
						SCALE	.0300	

CARRIER FRL ANGLE OF ATTACK, ALPHA, DEG.

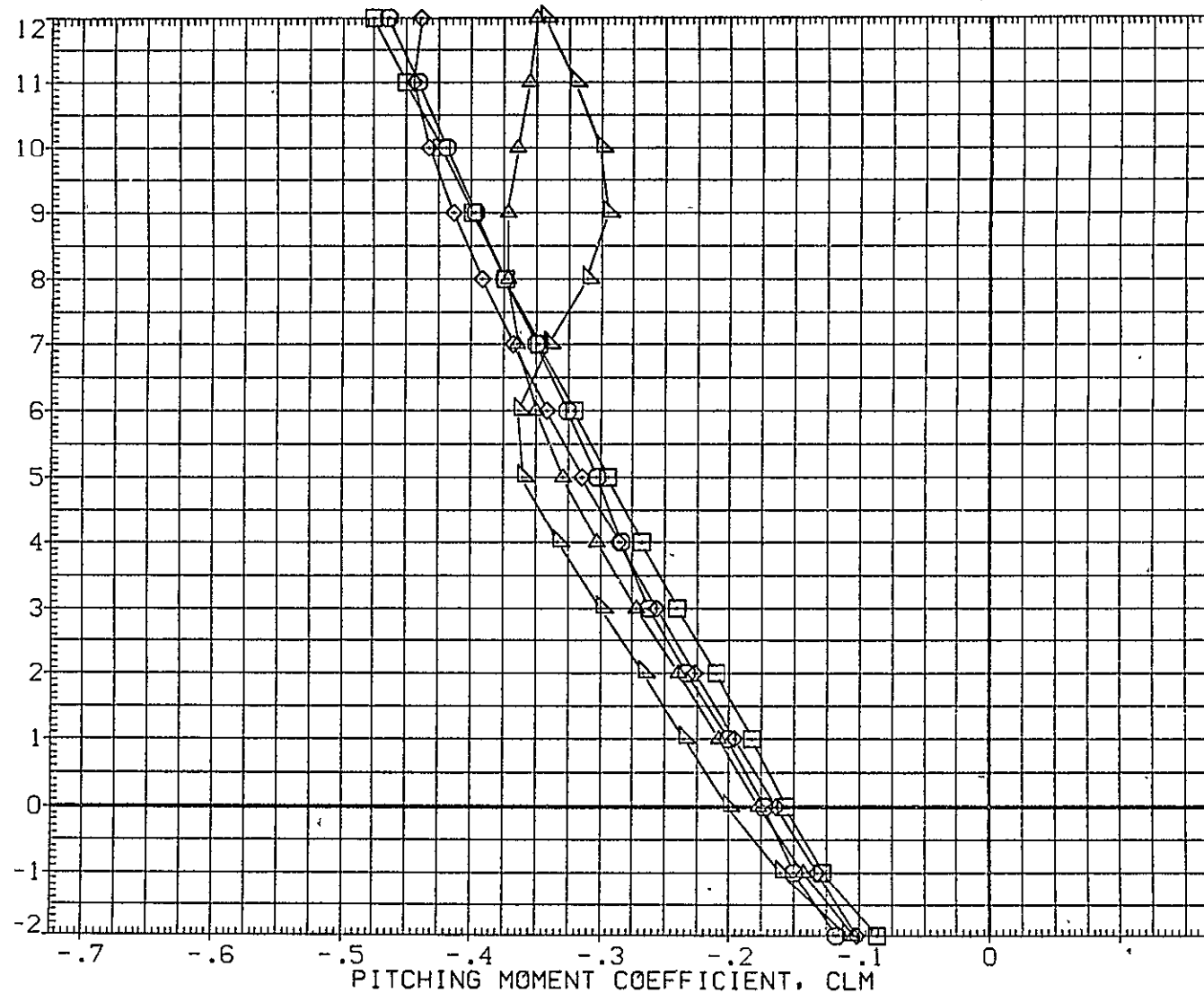


FIG. 9 747 ALONE, BASIC AIRPLANE FLAPS 20, TAIL ON(S=+1)

BTWT-1431CA5 K1 F20 H15.6 V9.1

(RGM059)

SYMBOL	MACH	PARAMETRIC VALUES			
○	.172	BETA	.000	STAB	1.000
□	.500	RUD-U	.000	RUD-L	.000
◇	.600	ELV-1B	.000	ELV-0B	3.000
△	.700	S1-2	.000	S3-4	.000
		S5-6	.000		

REFERENCE INFORMATION		
SREF	5500.0000	SG.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

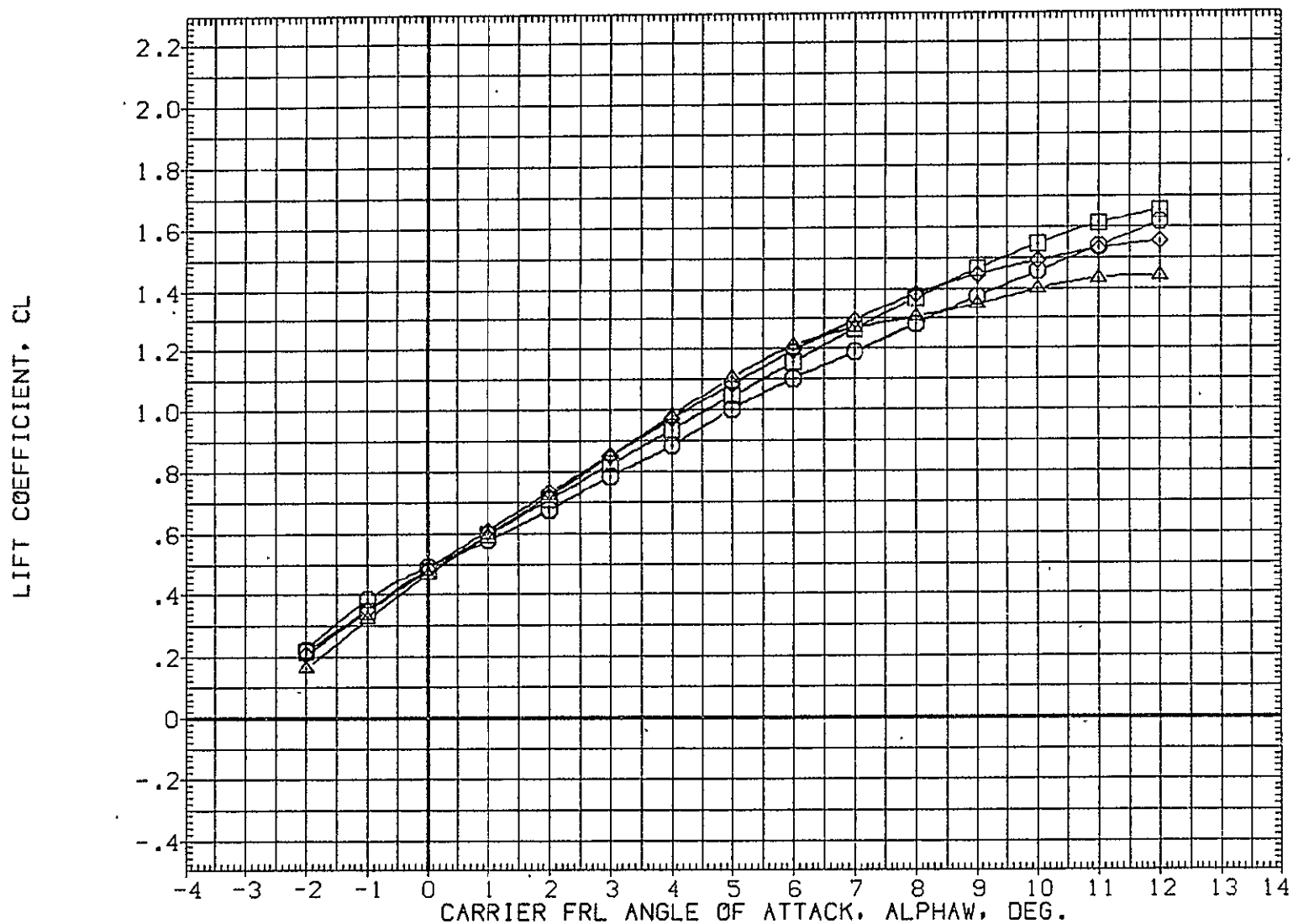


FIG. 10 747 ALONE+TIP FINS FLAPS 20, TAIL ON(S=+1)

SYMBOL	MACH	PARAMETRIC VALUES			
○	.172	BETA	.000	STAB	1.000
□	.500	RUD-U	.000	RUD-L	.000
◇	.600	ELV-1B	.000	ELV-0B	3.000
△	.700	S1-2	.000	S3-4	.000
		S5-6	.000		

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

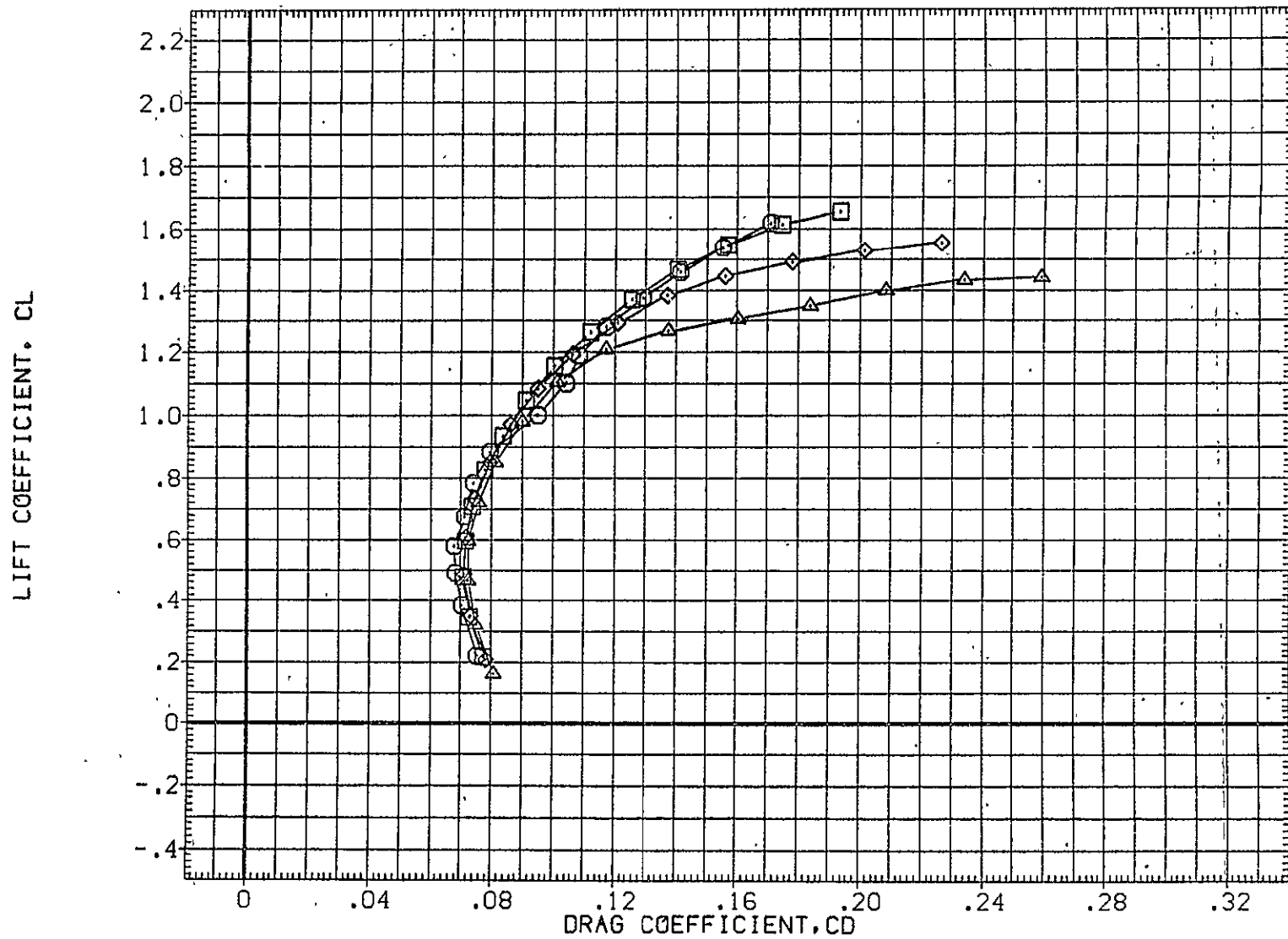


FIG. 10 747 ALONE+TIP FINS FLAPS 20, TAIL ON(S=+1)

BTWT-1431CA5 K1 F20 H15.6 V9.1

(RGM059)

SYMBOL	MACH	PARAMETRIC VALUES				REFERENCE INFORMATION		
○	.172	BETA	.000	STAB	1.000	SREF	5500.0000	SQ.FT.
□	.500	RUD-U	.000	RUD-L	.000	LREF	327.8000	IN.
◇	.600	ELV-1B	.000	ELV-0B	3.000	BREF	2348.0000	IN.
△	.700	S1-2	.000	S3-4	.000	XMRP	1339.9100	IN. XC
		S5-6	.000			YMRP	.0000	IN. YC
						ZMRP	190.7500	IN. ZC
						SCALE	.0300	

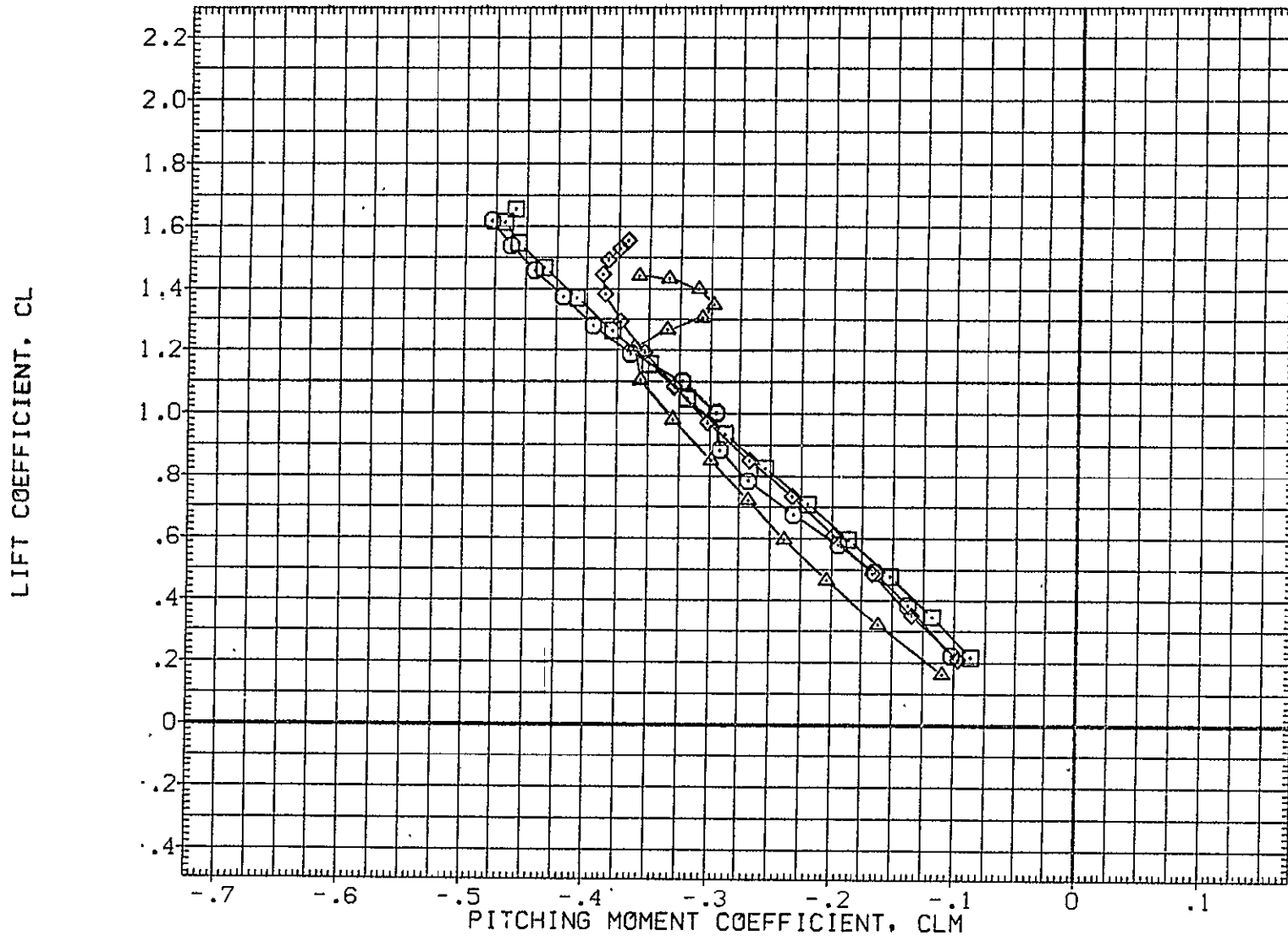


FIG. 10 747 ALONE+TIP FINS FLAPS 20, TAIL ON(S=+1)

SYMBOL	MACH	PARAMETRIC VALUES				REFERENCE INFORMATION		
○	.172	BETA	.000	STAB	1.000	SREF	5500.0000	SQ.FT.
□	.500	RUD-U	.000	RUD-L	.000	LREF	327.8000	IN.
◇	.600	ELV-1B	.000	ELV-0B	3.000	BREF	2348.0000	IN.
△	.700	S1-2	.000	S3-4	.000	XMRF	1339.9100	IN. XC
		S5-6	.000			YMRF	.0000	IN. YC
						ZMRF	190.7500	IN. ZC
						SCALE	.0300	

CARRIER FRL ANGLE OF ATTACK, ALPHA, DEG.

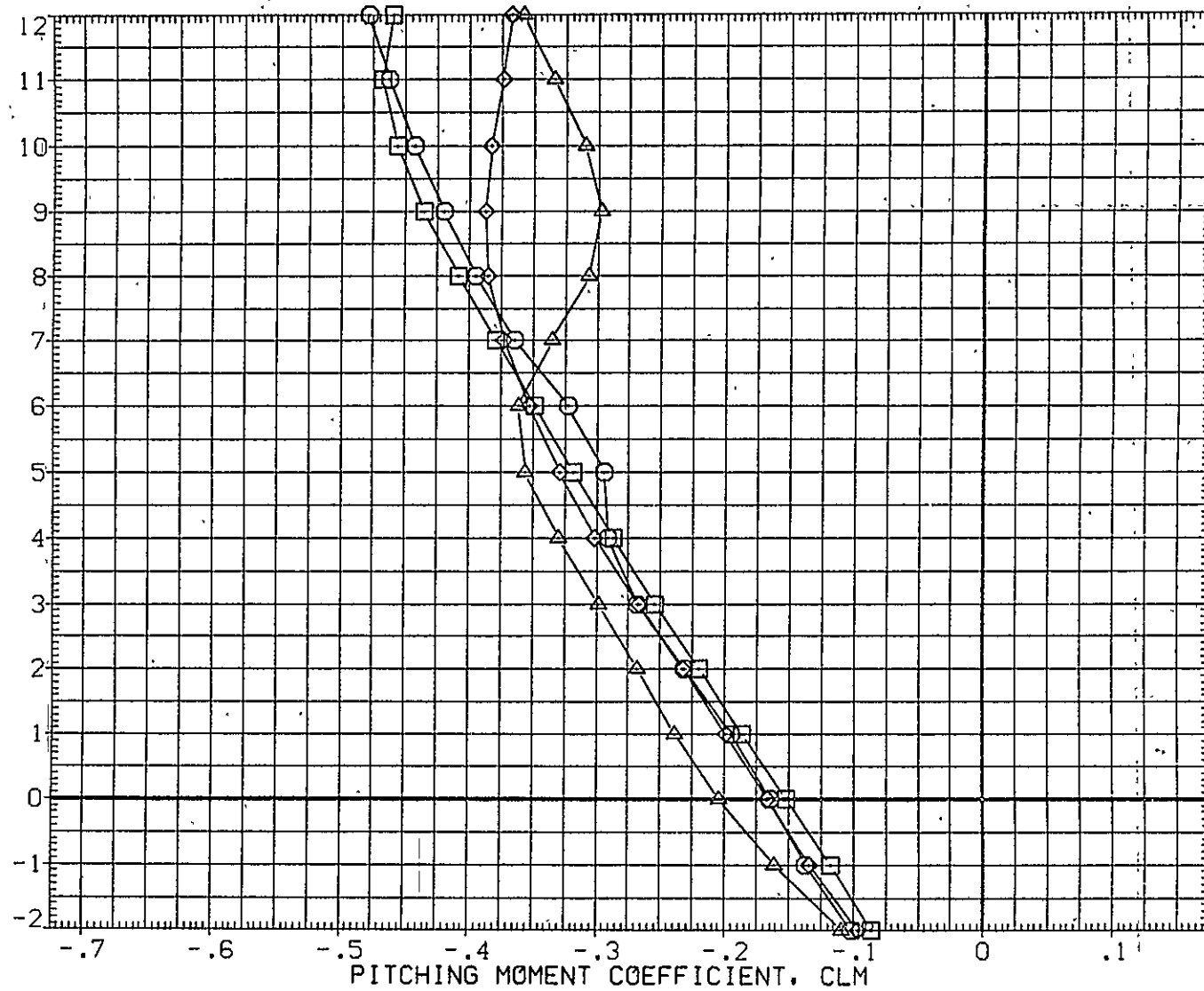


FIG. 10 747 ALONE+TIP FINS FLAPS 20, TAIL ON(S=+1)

CA5 K1 F20 H15.6 V9.1 (PLUS. 0RB TC5 AT38.1)(RGM064)

SYMBOL	MACH	PARAMETRIC VALUES				REFERENCE INFORMATION		
○	.500	BETA	.000	STAB	1.000	SREF	5500.0000	SQ.FT.
□	.600	RUD-U	.000	RUD-L	.000	LREF	327.8000	IN.
◇	.700	ELV-IB	10.000	ELV-OB	13.000	BREF	2348.0000	IN.
		S1-2	45.000	S3-4	45.000	XMRP	1339.9100	IN. XC
		SS-6	45.000	IORB	9.700	YMRP	.0000	IN. YC
						ZMRP	190.7500	IN. ZC
						SCALE	.0300	

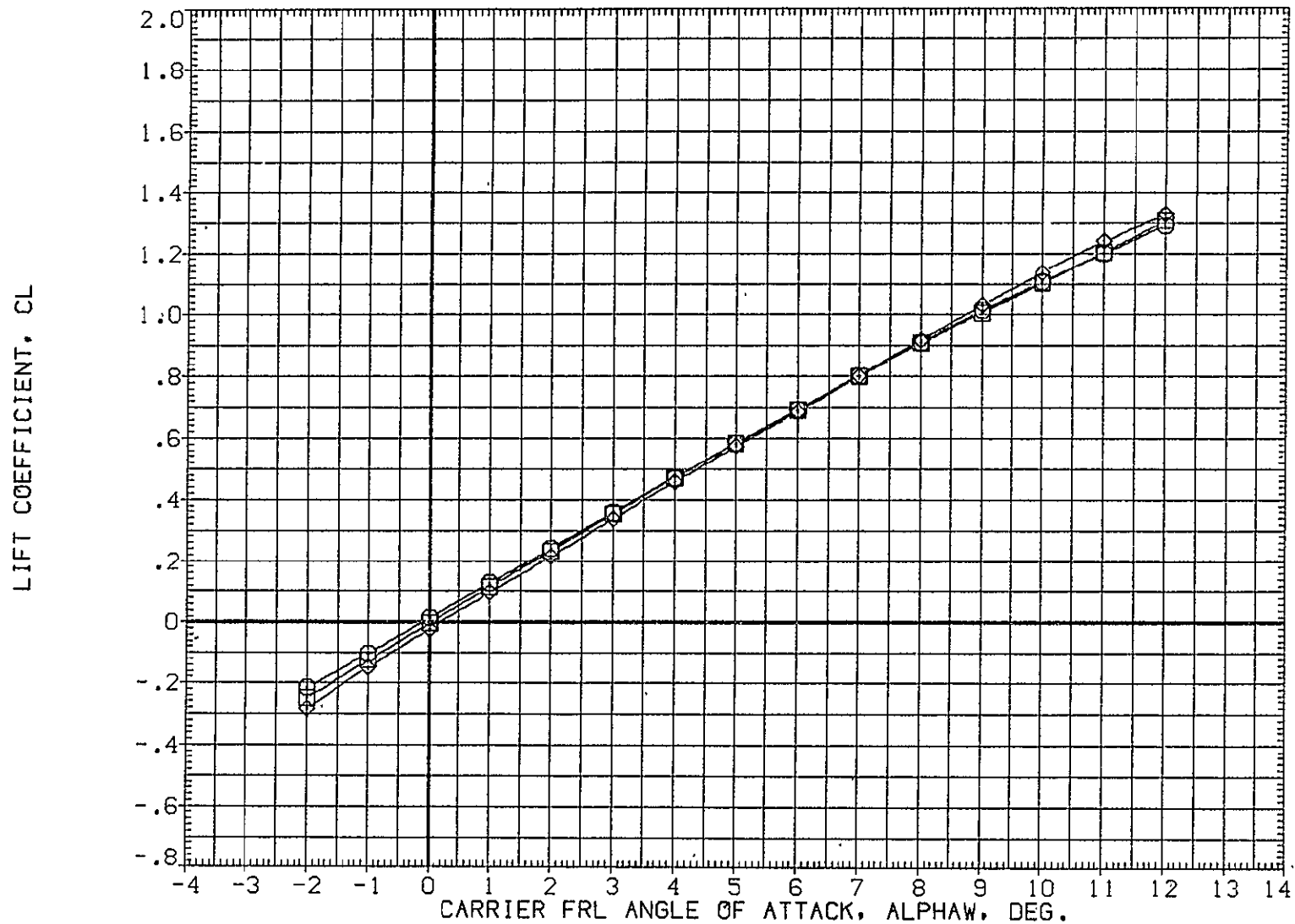


FIG. 11 747+0RB(10 DEG),+TIP FINS +SP45 FLAPS 20 LAUNCH, ELEV=10 DEG TOTAL

SYMBOL	MACH	PARAMETRIC VALUES				REFERENCE INFORMATION		
○	.500	BETA	.000	STAB	1.000	SREF	5500.0000	SQ.FT.
□	.600	RUD-U	.000	RUD-L	.000	LREF	327.8000	IN.
◇	.700	ELV-1B	10.000	ELV-0B	13.000	BREF	2348.0000	IN.
		S1-2	45.000	S3-4	45.000	XMRP	1339.9100	IN. XC
		S5-6	45.000	10RB	9.700	YMRP	.0000	IN. YC
						ZMRP	190.7500	IN. ZC
						SCALE	.0300	

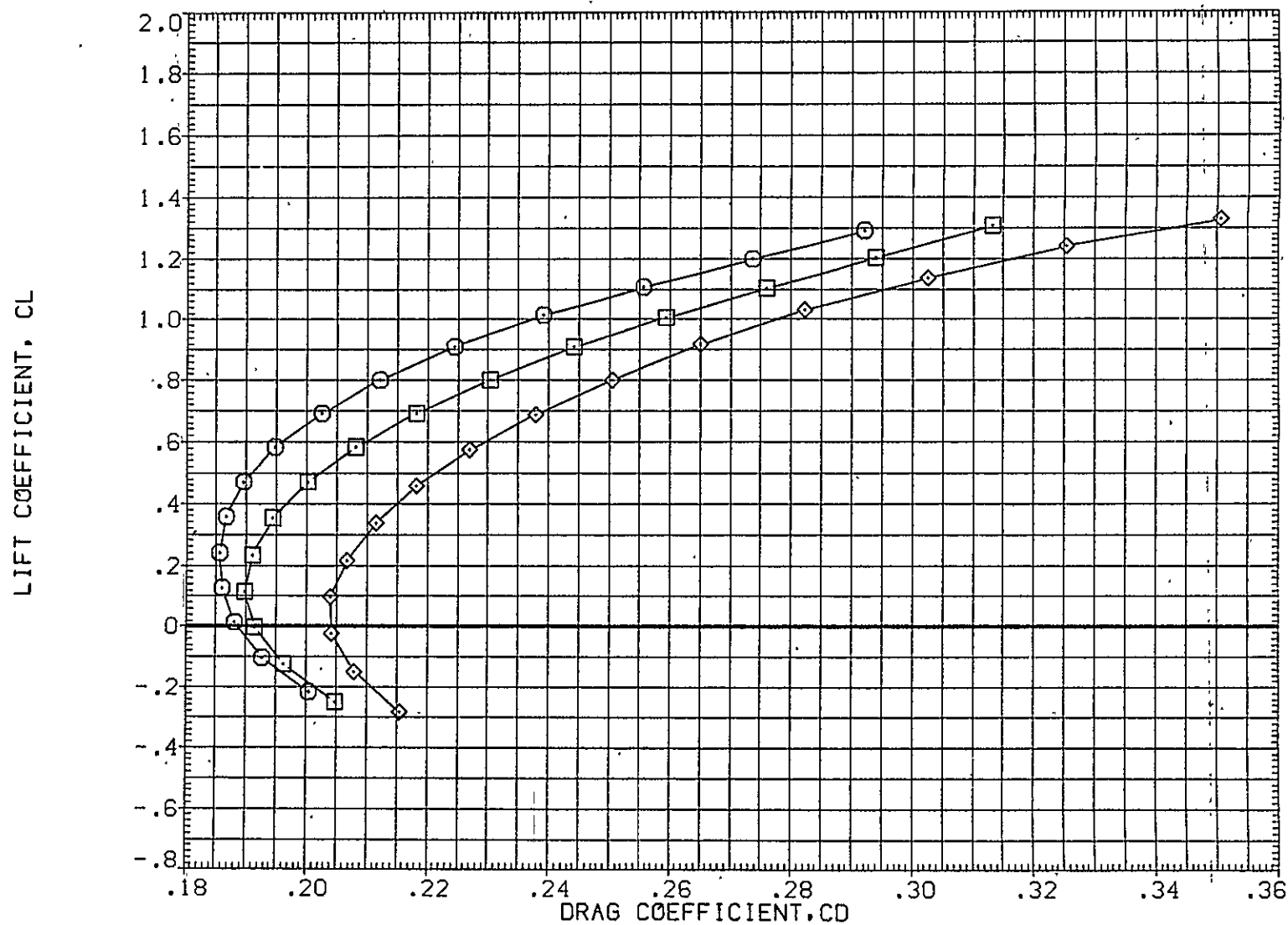


FIG. 11 747+0RB(10 DEG),+TIP FINS +SP45 FLAPS 20 LAUNCH, ELEV=10 DEG TOTAL

CA5 K1 F20 H15.6 V9.1 (PLUS. 0RB TC5 AT38.1)(RGM064)

SYMBOL

○
□
◇

MACH

.500
.600
.700

PARAMETRIC VALUES

BETA	.000	STAB	1.000
RUD-U	.000	RUD-L	.000
ELV-IB	10.000	ELV-OB	13.000
S1-2	45.000	S3-4	45.000
S5-6	45.000	IORB	9.700

REFERENCE INFORMATION

SREF	5500.0000	SQ.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

LIFT COEFFICIENT, CL

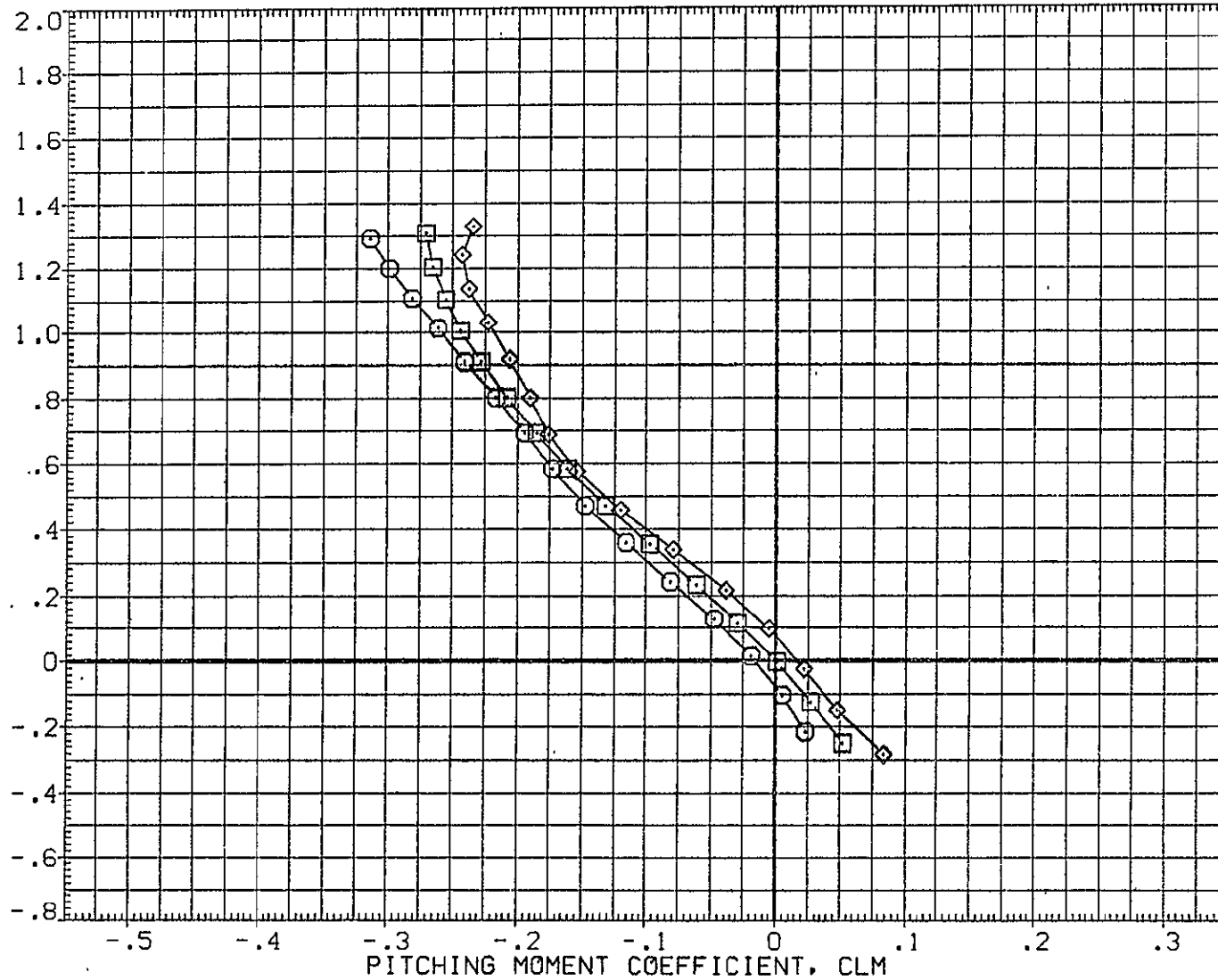


FIG. 11 747+0RB(10 DEG),+TIP FINS +SP45 FLAPS 20 LAUNCH, ELEV=10 DEG

TOTAL

SYMBOL	MACH	PARAMETRIC VALUES			
○	.500	BETA	.000	STAB	1.000
□	.600	RUD-U	.000	RUD-L	.000
◇	.700	ELV-1B	10.000	ELV-0B	13.000
		S1-2	45.000	S3-4	45.000
		S5-6	45.000	10RB	9.700

REFERENCE INFORMATION		
SREF	5500.0000	SO.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

CARRIER FRL ANGLE OF ATTACK, ALPHA, DEG.

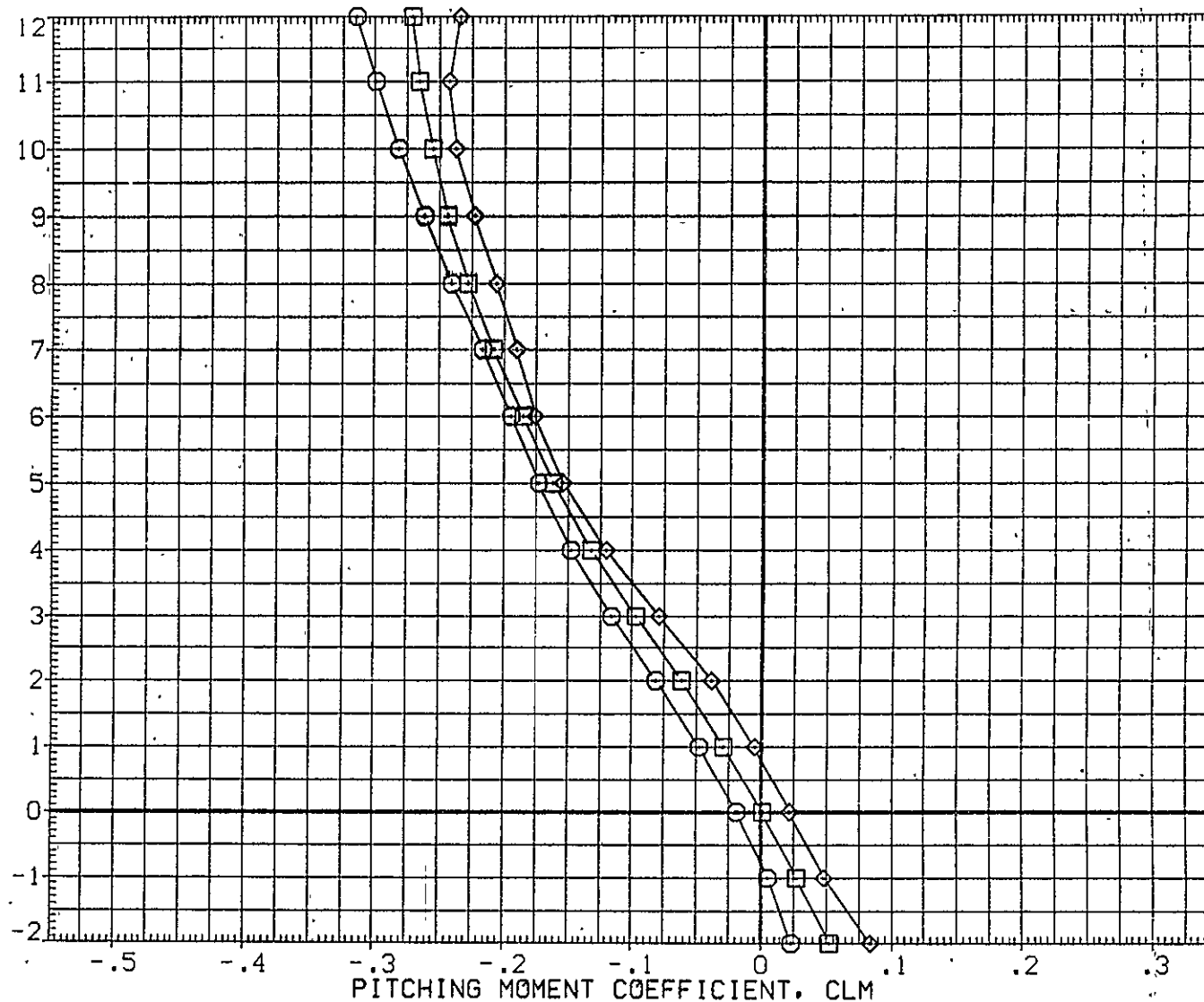


FIG. 11 747+ORB(10 DEG),+TIP FINS +SP45 FLAPS 20 LAUNCH, ELEV=10 DEG

TOTAL

CA5 K1 F20 H15.6 V9.1 MINUS ORB TC5 AT38.1 (BGM064)

SYMBOL
○
□
◇

MACH
.500
.600
.700

PARAMETRIC VALUES			
BETA	.000	STAB	1.000
RUD-U	.000	RUD-L	.000
ELV-IB	10.000	ELV-OB	13.000
S1-2	45.000	S3-4	45.000
S5-6	45.000	ICRB	9.700

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

INCREMENTAL LIFT FORCE COEFFICIENT(STABILITY AXIS), DCL

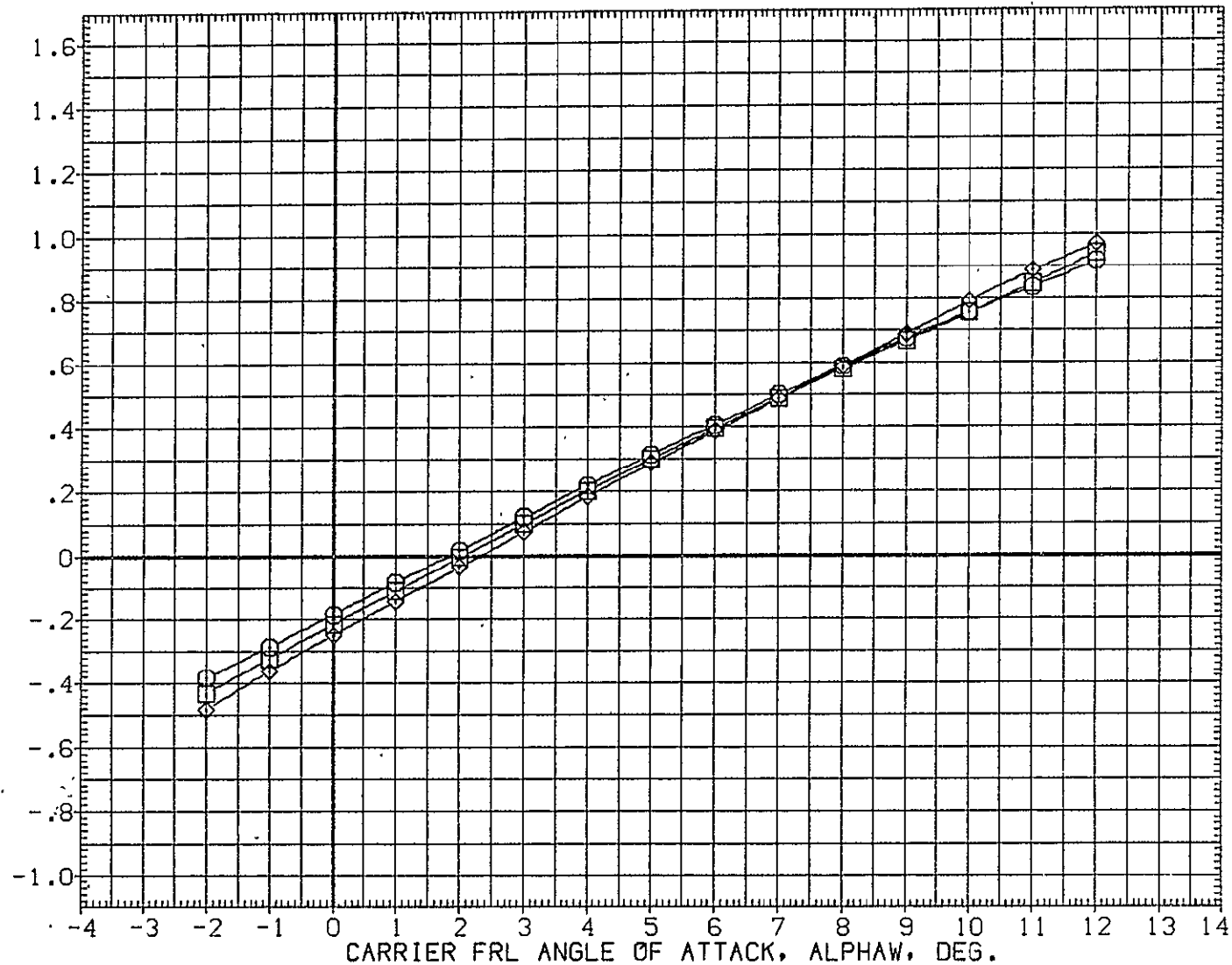


FIG. 12 747+ORB(10 DEG),+TIP FINS +SP45 FLAPS 20 LAUNCH, ELEV=10 DEG

747

SYMBOL	MACH	PARAMETRIC VALUES			
○	.500	BETA	.000	STAB	1.000
□	.600	RUD-U	.000	RUD-L	.000
◇	.700	ELV-IB	10.000	ELV-OB	13.000
		S1-2	45.000	S3-4	45.000
		S5-6	45.000	ICRB	9.700

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

INCREMENTAL LIFT FORCE COEFFICIENT(STABILITY AXIS), DCL

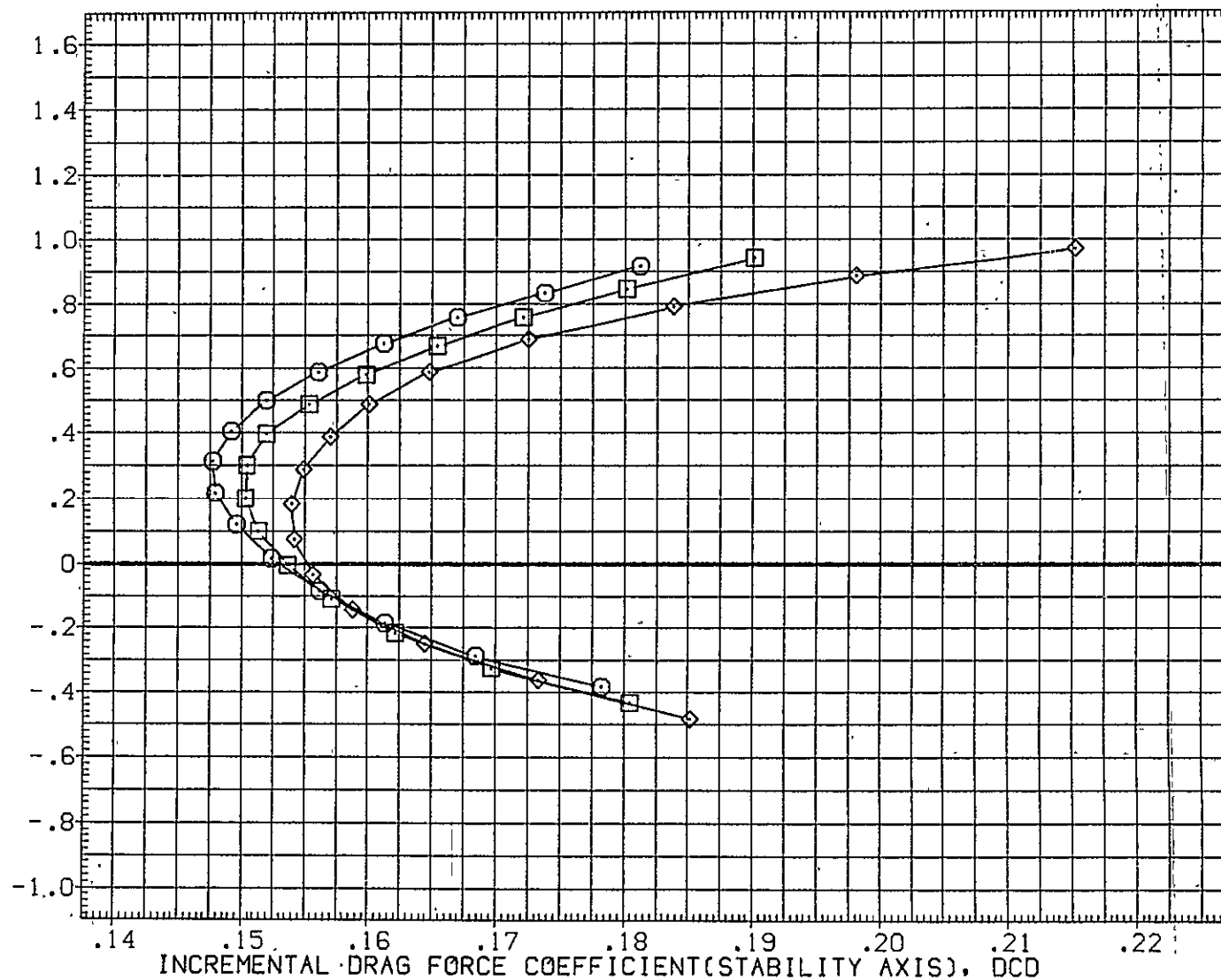


FIG. 12 747+ORB(10 DEG),+TIP FINS +SP45 FLAPS 20 LAUNCH, ELEV=10 DEG

747

PAGE

46

CA5 K1 F20 H15.6 V9.1 MINUS 0RB TC5 AT38.1 (BGM064)

SYMBOL	MACH	PARAMETRIC VALUES				REFERENCE INFORMATION		
○	.500	BETA	.000	STAB	1.000	SREF	5500.0000	SQ.FT.
□	.600	RUD-U	.000	RUD-L	.000	LREF	327.8000	IN.
◇	.700	ELV-1B	10.000	ELV-0B	13.000	BREF	2348.0000	IN.
		S1-2	45.000	S3-4	45.000	XMRP	1339.9100	IN. XC
		S5-6	45.000	10RB	9.700	YMRP	.0000	IN. YC
						ZMRP	190.7500	IN. ZC
						SCALE	.0300	

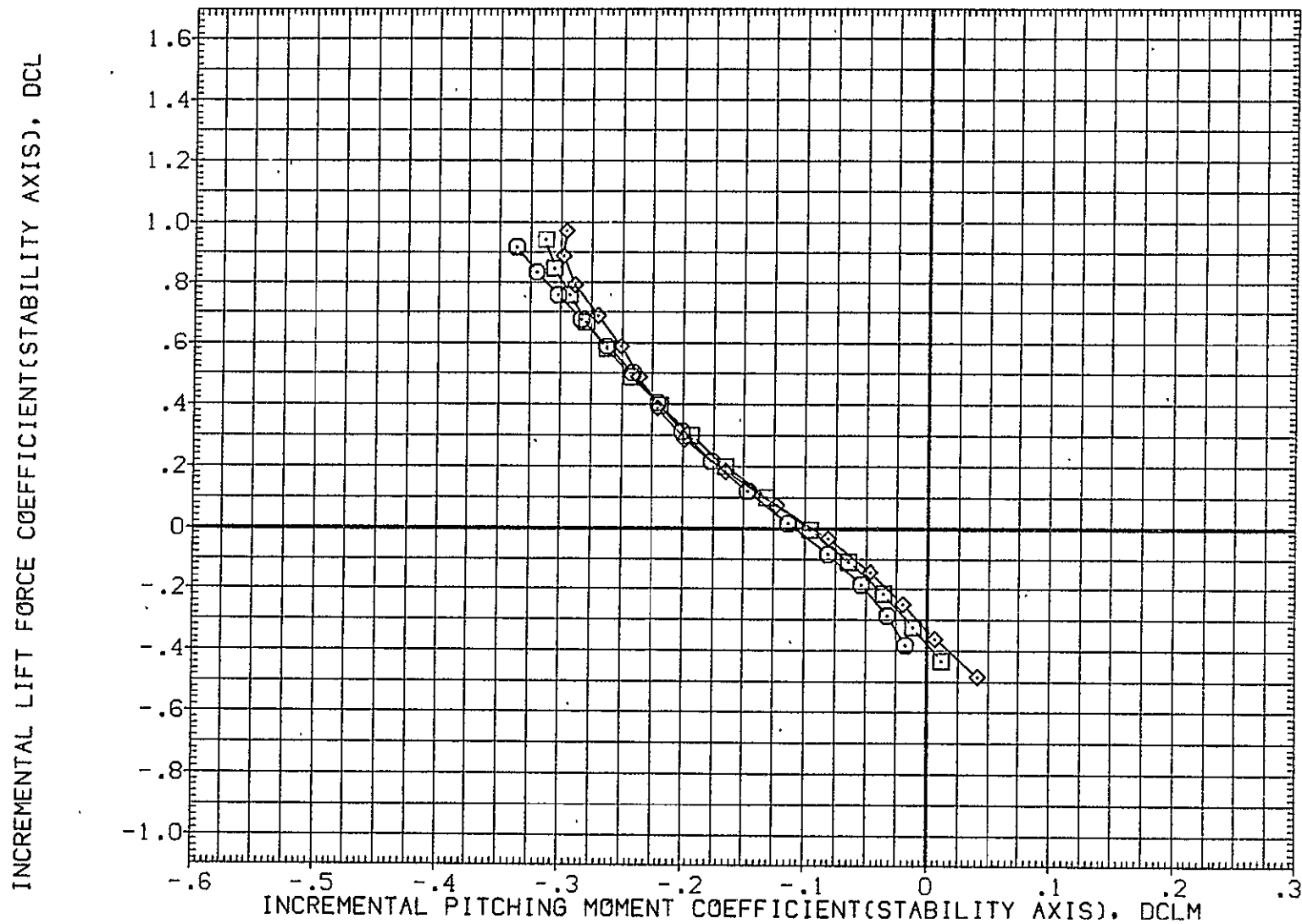


FIG. 12 747+0RB(10 DEG),+TIP FINS +SP45 FLAPS 20 LAUNCH, ELEV=10 DEG

747

SYMBOL	MACH	PARAMETRIC VALUES				REFERENCE INFORMATION		
○	.500	BETA	.000	STAB	1.000	SREF	5500.0000	SQ.FT.
□	.600	RUD-U	.000	RUD-L	.000	LREF	327.8000	IN.
◇	.700	ELV-1B	10.000	ELV-0B	13.000	BREF	2348.0000	IN.
		S1-2	45.000	S3-4	45.000	XMRP	1339.9100	IN. XC
		S5-6	45.000	10RB	9.700	YMRP	.0000	IN. YC
						ZMRP	190.7500	IN. ZC
						SCALE	.0300	

CARRIER FRL ANGLE OF ATTACK, ALPHA, DEG.

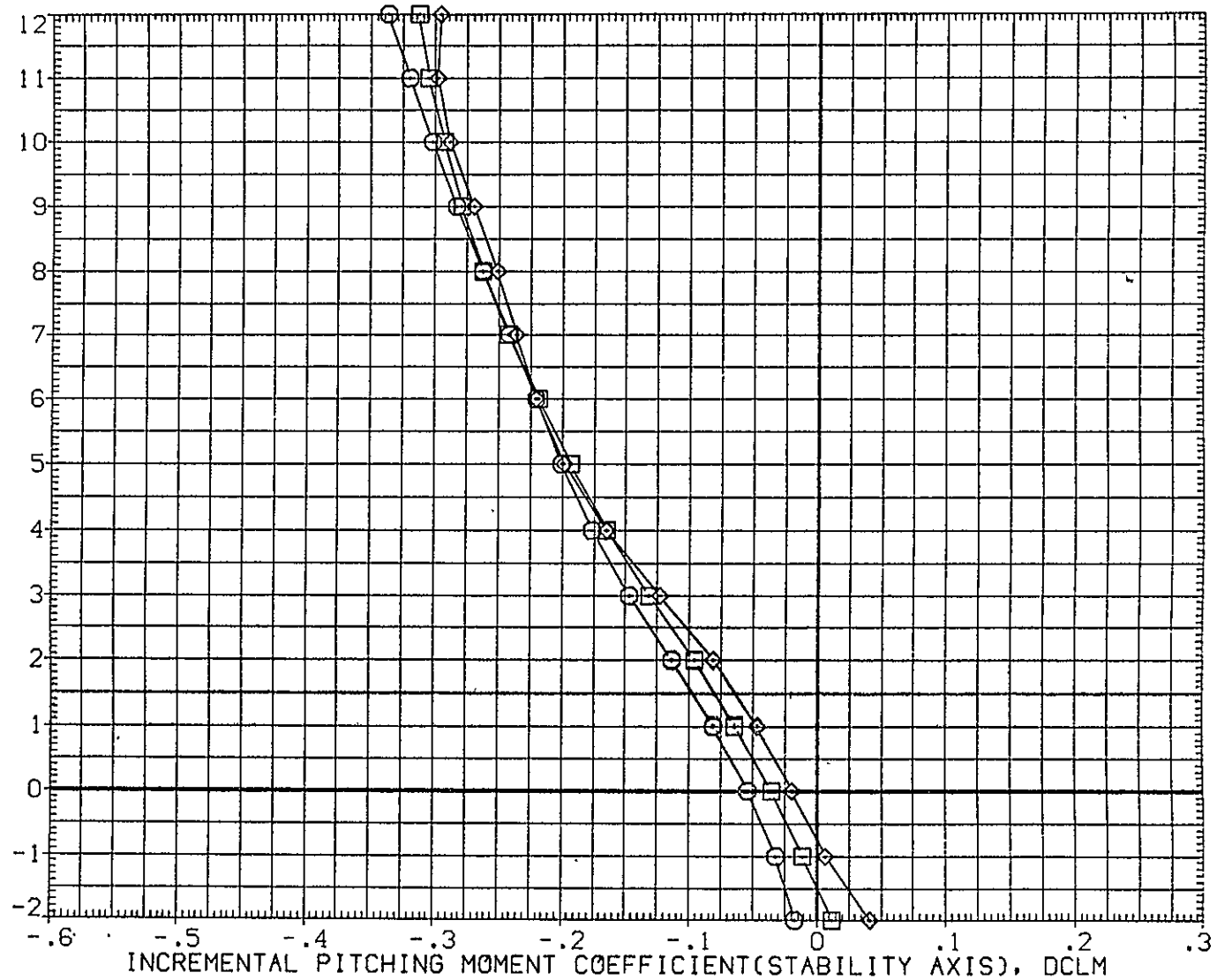


FIG. 12 747+0RB(10 DEG),+TIP FINS +SP45 FLAPS 20 LAUNCH, ELEV=10 DEG 747

CA5 ORB TC5 AT38.1 (PRES. K1 F20 H15.6 V9.1)(YGM064)

SYMBOL

○
□
◇

MACH

.500

BETA

PARAMETRIC VALUES

.000

.000

10.000

45.000

45.000

STAB

1.000

RUD-L

.000

ELV-OB

13.000

S3-4

45.000

10RB

9.700

REFERENCE INFORMATION

SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN. X0
YMRP	.0000	IN. Y0
ZMRP	375.0000	IN. Z0
SCALE	.0300	

LIFT COEFFICIENT, CL

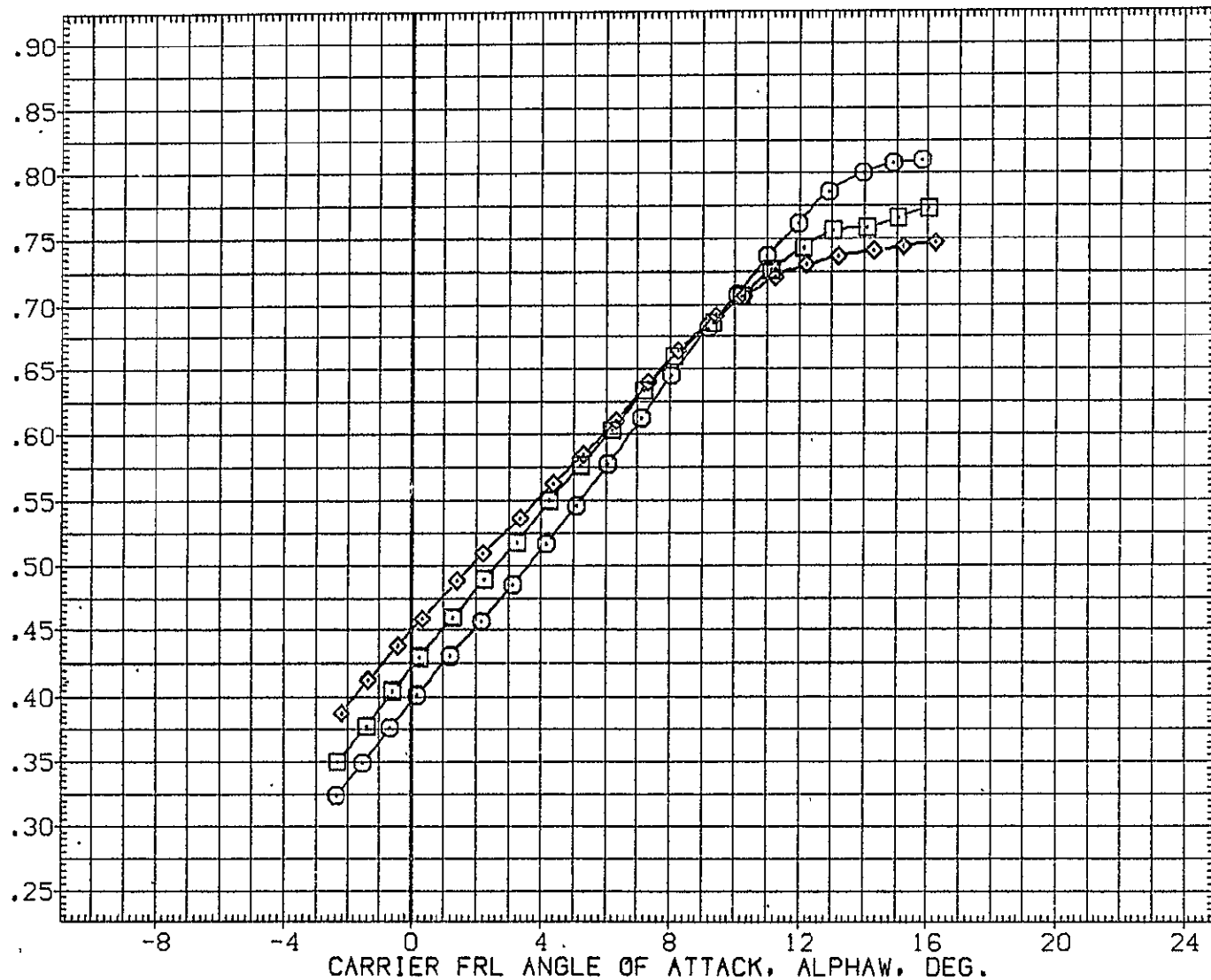


FIG. 13 747+ORB(10 DEG),+TIP FINS +SP45 FLAPS 20 LAUNCH, ELEV=10 DEG ORB

SYMBOL	MACH	PARAMETRIC VALUES				REFERENCE INFORMATION		
○	.500	BETA	.000	STAB	1.000	SREF	2690.0000	SQ.FT.
□	.601	RUD-U	.000	RUD-L	.000	LREF	474.8100	IN.
◇	.700	ELV-18	10.000	ELV-08	13.000	BREF	936.6800	IN.
		S1-2	45.000	S3-4	45.000	XMRP	1109.0000	IN. X0
		S5-6	45.000	ICRB	9.700	YMRP	.0000	IN. Y0
						ZMRP	375.0000	IN. Z0
						SCALE	.0300	

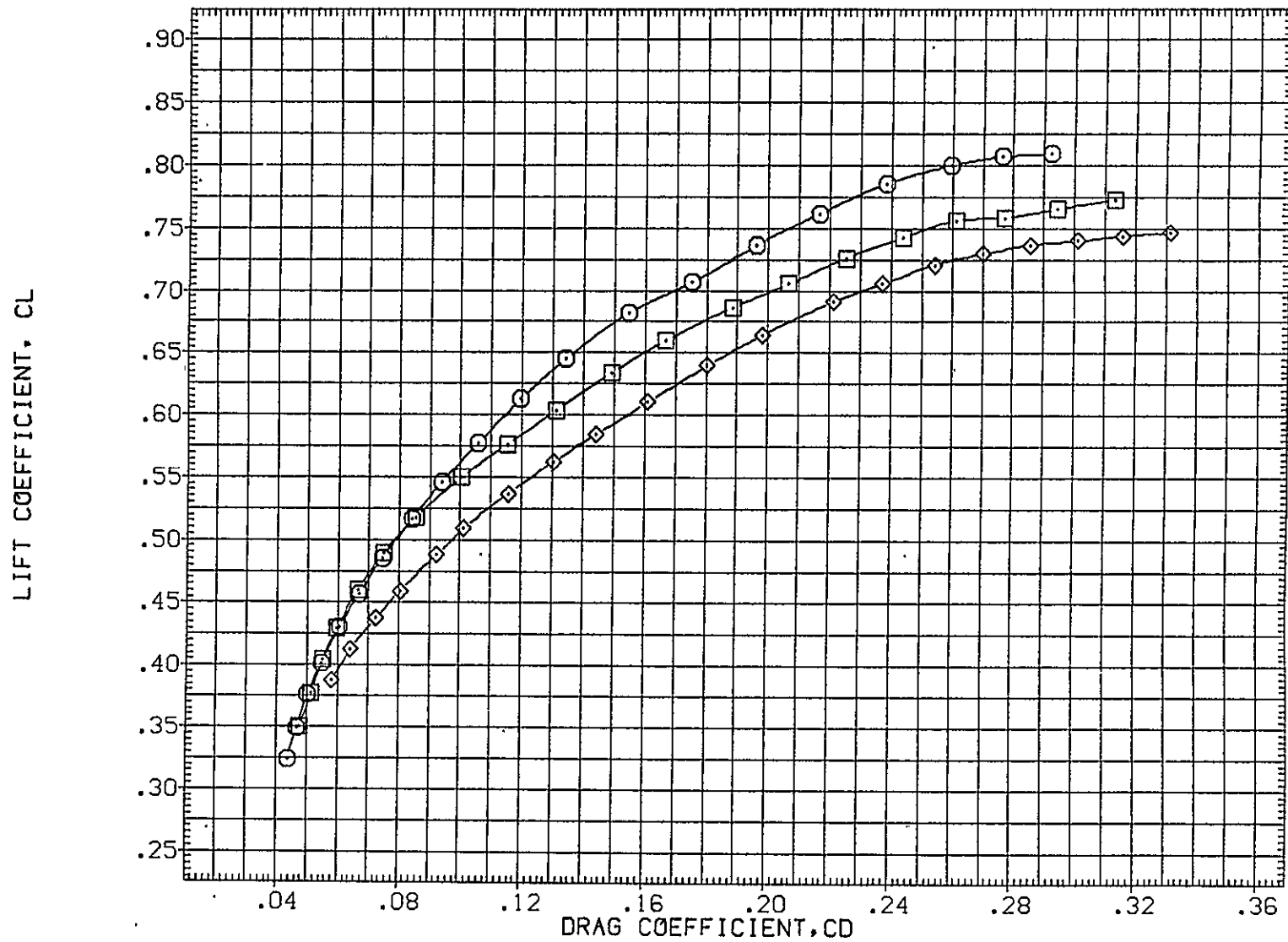


FIG. 13 747+ORB(10 DEG),+TIP FINS +SP45 FLAPS 20 LAUNCH, ELEV=10 DEG ORB

CA5 0RB TC5 AT38.1 (PRES. K1 F20 H15.6 V9.1)(YGM064)

SYMBOL	MACH	PARAMETRIC VALUES				REFERENCE INFORMATION		
○	.500	BETA	.000	STAB	1.000	SREF	2690.0000	SQ.FT.
□	.601	RUD-U	.000	RUD-L	.000	LREF	474.8100	IN.
◇	.700	ELV-IB	10.000	ELV-OB	13.000	BREF	936.6800	IN.
		S1-2	45.000	S3-4	45.000	XMRP	1109.0000	IN. X0
		SS-6	45.000	IORB	9.700	YMRP	.0000	IN. Y0
						ZMRP	375.0000	IN. Z0
						SCALE	.0300	

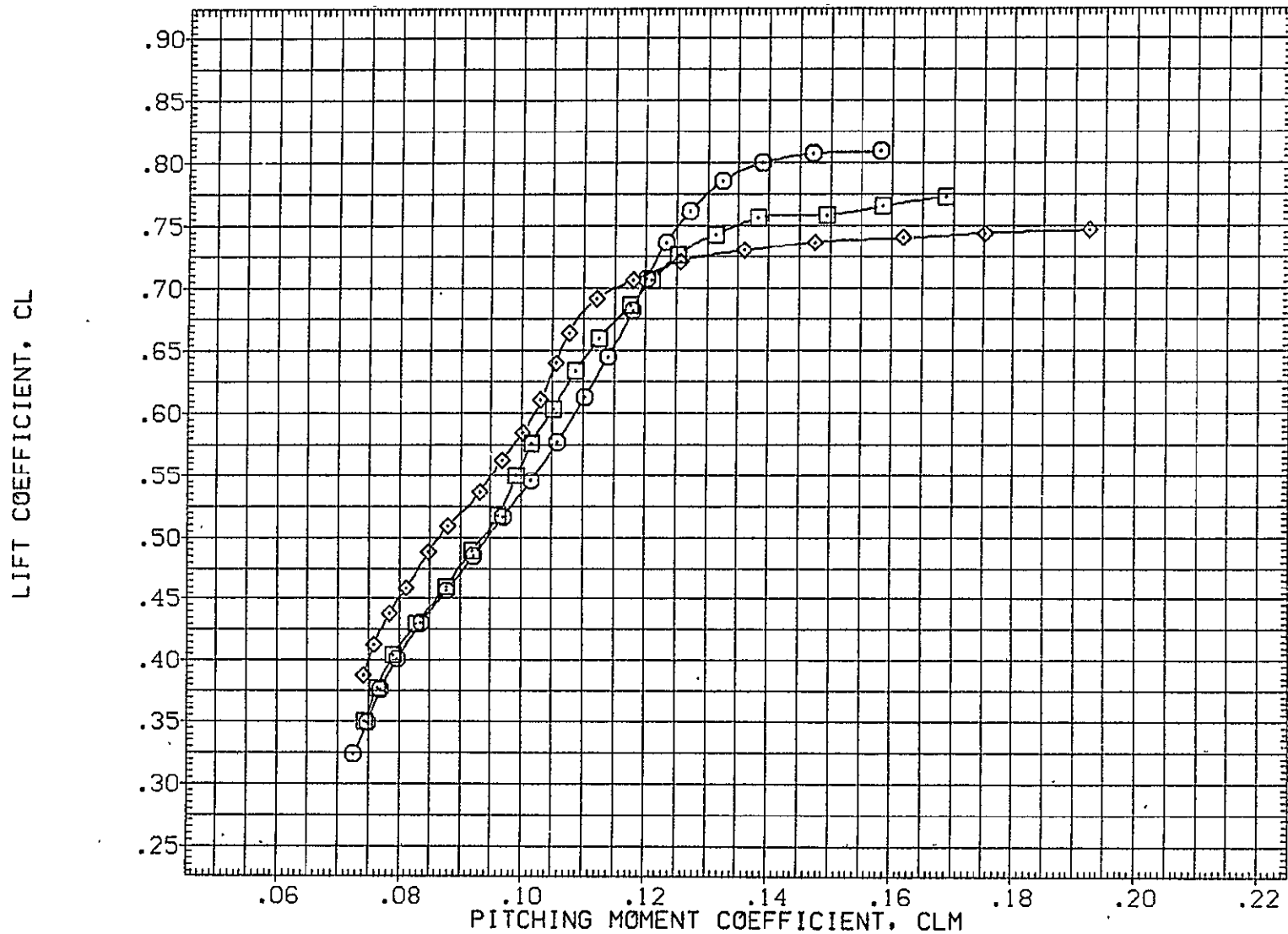


FIG. 13 747+0RB(10 DEG),+TIP FINS +SP45 FLAPS 20 LAUNCH, ELEV=10 DEG 0RB

SYMBOL	MACH	PARAMETRIC VALUES			
○	.500	BETA	.000	STAB	1.000
□	.601	RUD-U	.000	RUD-L	.000
◇	.700	ELV-1B	10.000	ELV-0B	13.000
		S1-2	45.000	S3-4	45.000
		S5-6	45.000	10RB	9.700

REFERENCE INFORMATION		
SREF	2690.0000	SG.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN. X0
YMRP	.0000	IN. Y0
ZMRP	375.0000	IN. Z0
SCALE	.0300	

CARRIER FRL ANGLE OF ATTACK, ALPHA, DEG.

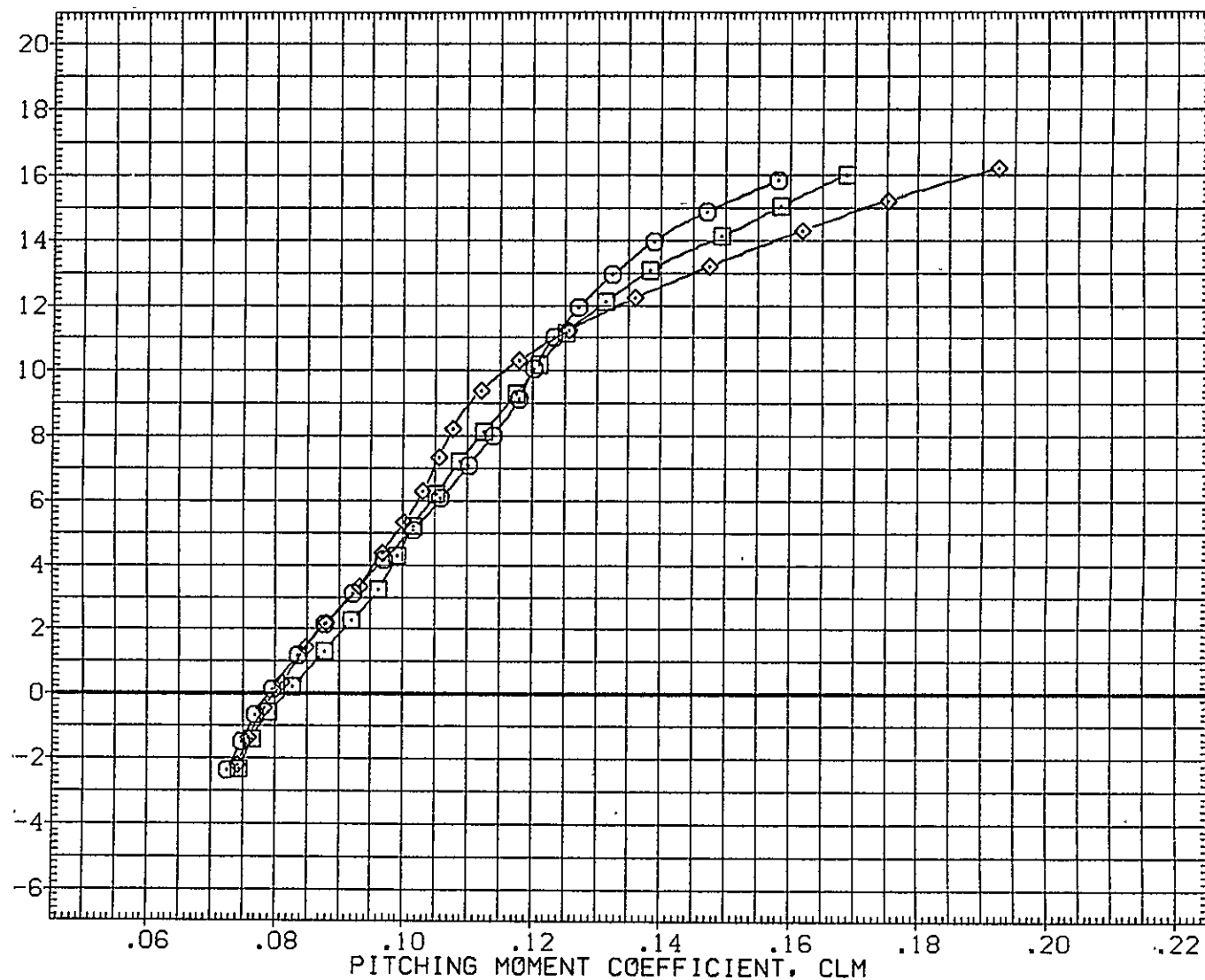


FIG. 13 747+0RB(10 DEG),+TIP FINS +SP45 FLAPS 20 LAUNCH, ELEV=10 DEG 0RB

CA5 K1 F20 H15.6 V9.1 (PLUS. ORB TC5 AT38.1)(FGM065)

SYMBOL	MACH	PARAMETRIC VALUES			
○	.500	BETA	.000	STAB	1.000
□	.600	RUD-U	.000	RUD-L	.000
◇	.700	ELV-1B	.000	ELV-0B	3.000
		S1-2	45.000	S3-4	45.000
		S5-6	45.000	10RB	9.700

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

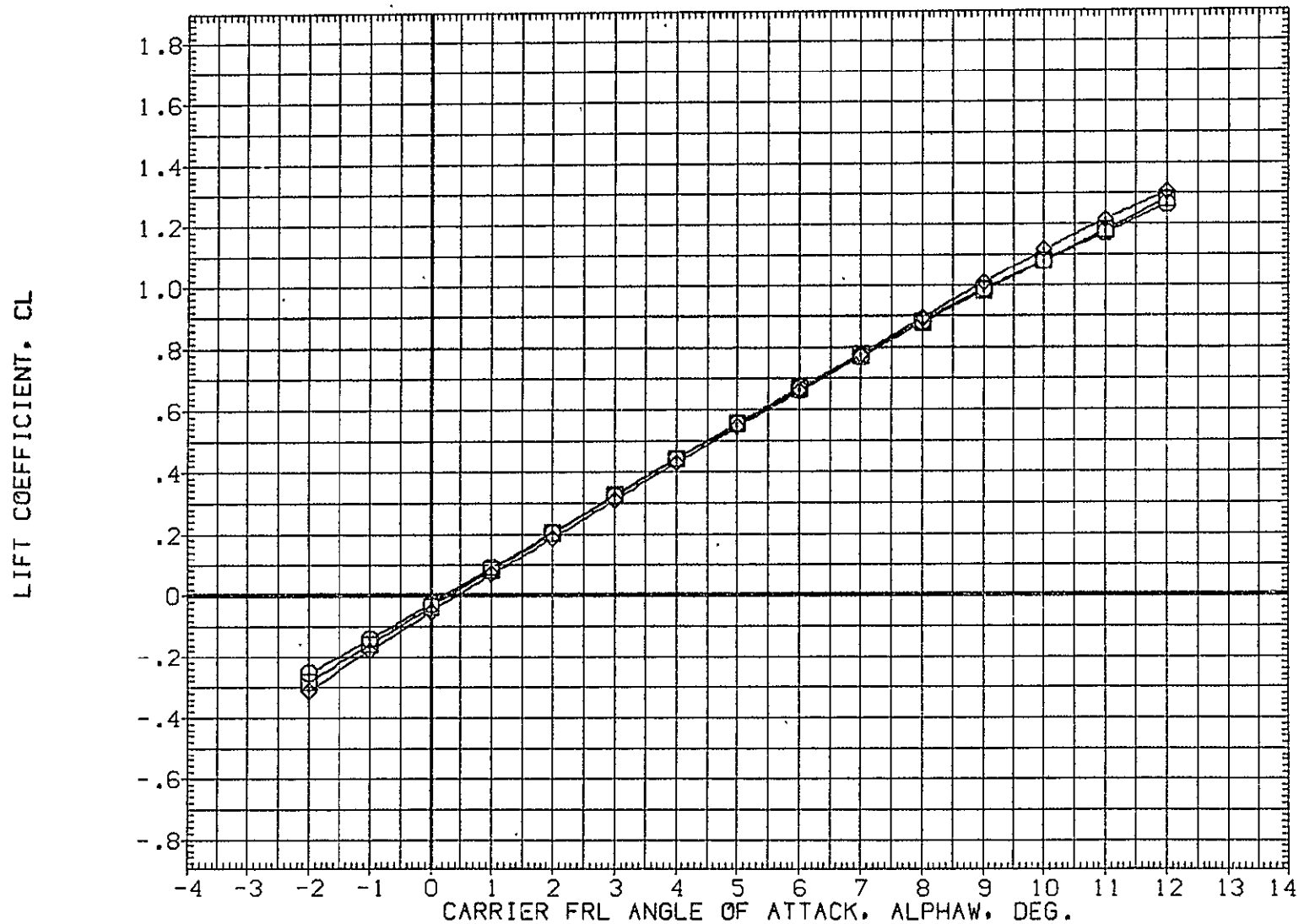


FIG. 14 747+ORB(10 DEG),+TIP FINS +SP45 FLAPS 20 LAUNCH, BASELINE(S=+1) TOTAL

SYMBOL	MACH	PARAMETRIC VALUES			
○	.500	BETA	.000	STAB	1.000
□	.600	RUD-U	.000	RUD-L	.000
◇	.700	ELV-1B	.000	ELV-OB	3.000
		S1-2	45.000	S3-4	45.000
		S5-6	45.000	IORB	9.700

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

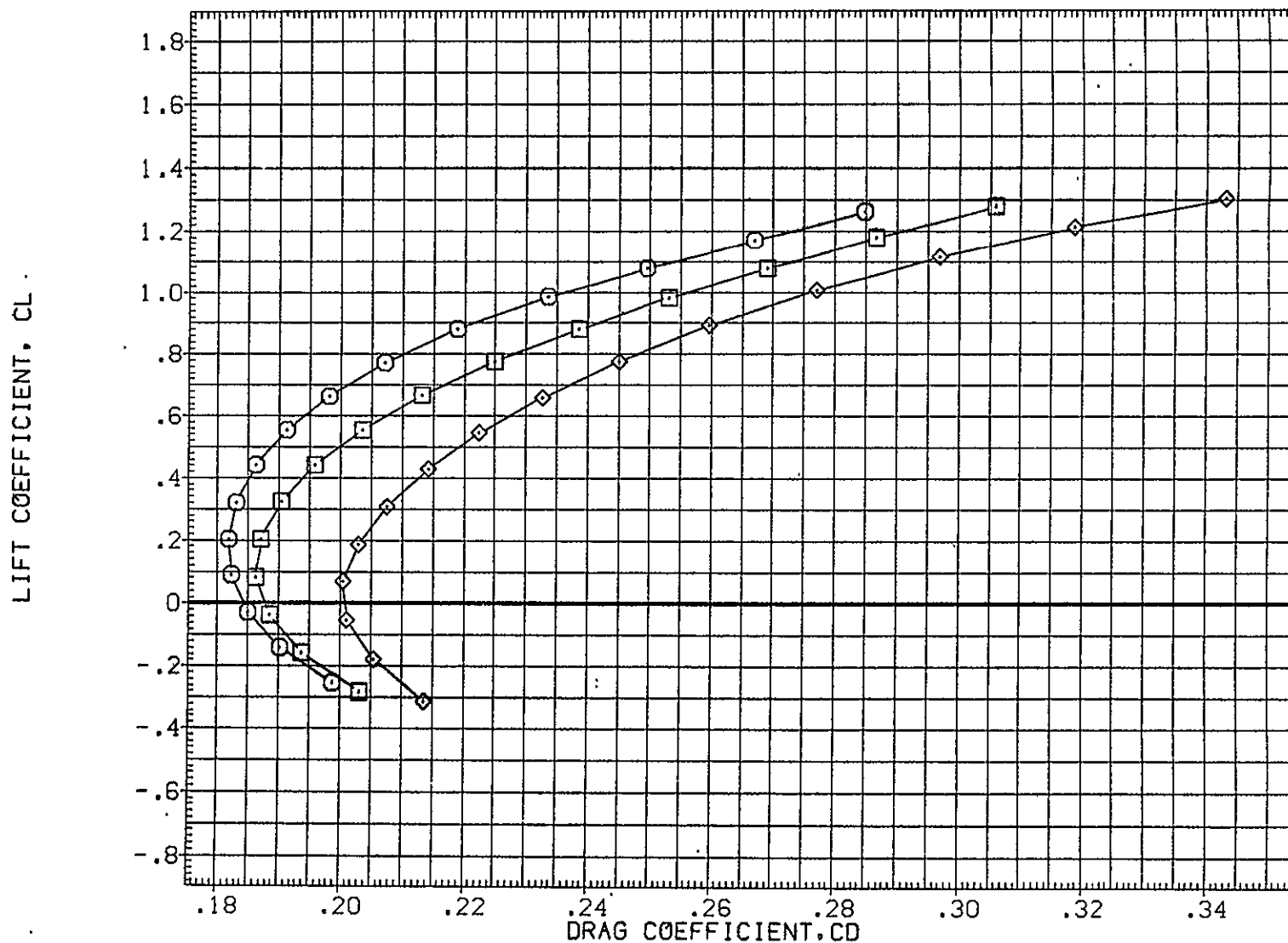


FIG. 14 747+ORB(10 DEG),+TIP FINS +SP45 FLAPS 20 LAUNCH, BASELINE(S=+1) TOTAL

CA5 K1 F20 H15.6 V9.1 (PLUS. 0RB TC5 AT38.1)(FGM065)

SYMBOL	MACH	PARAMETRIC VALUES				REFERENCE INFORMATION		
○	.500	BETA	.000	STAB	1.000	SREF	5500.0000	SQ.FT.
□	.600	RUD-U	.000	RUD-L	.000	LREF	327.8000	IN.
◇	.700	ELV-IB	.000	ELV-OB	3.000	BREF	2348.0000	IN.
		SI-2	45.000	S3-4	45.000	XMRP	1339.9100	IN. XC
		SS-6	45.000	ICRB	9.700	YMRP	.0000	IN. YC
						ZMRP	190.7500	IN. ZC
						SCALE	.0300	

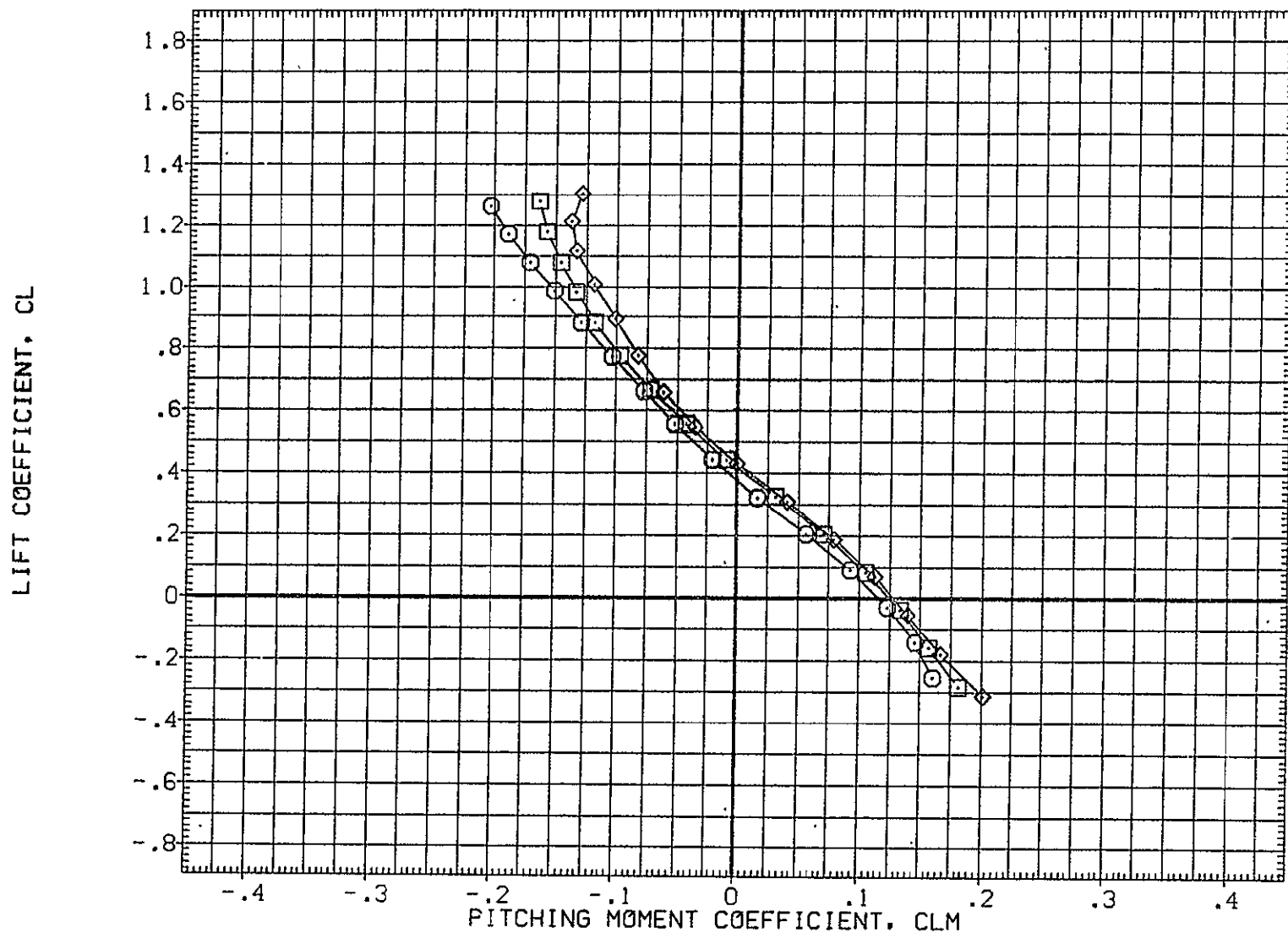


FIG. 14 747+0RB(10 DEG),+TIP FINS +SP45 FLAPS 20 LAUNCH, BASELINE(S=+1) TOTAL

SYMBOL	MACH	PARAMETRIC VALUES			
○	.500	BETA	.000	STAB	1.000
□	.600	RUD-U	.000	RUD-L	.000
◇	.700	ELV-IB	.000	ELV-OB	3.000
		S1-2	45.000	S3-4	45.000
		S5-6	45.000	IORB	9.700

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

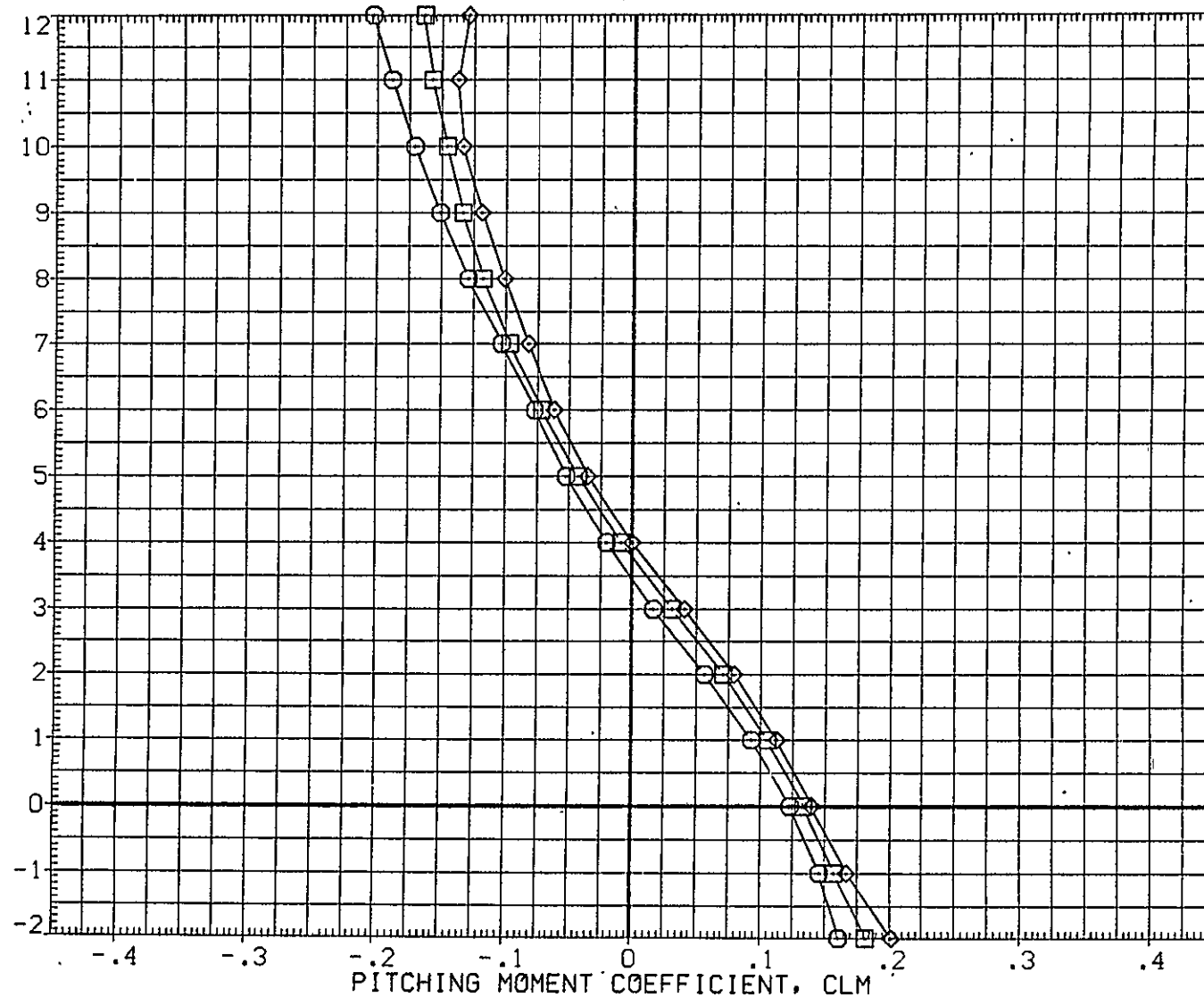
CARRIER FRL ANGLE OF ATTACK, ALPHA_{FW}, DEG.

FIG. 14 747+0RB(10 DEG),+TIP FINS +SP45 FLAPS 20 LAUNCH, BASELINE(S=+1) TOTAL

CA5 K1 F20 H15.6 V9.1 MINUS ORB TC5 AT38.1 (EGM065)

SYMBOL	MACH	PARAMETRIC VALUES				REFERENCE INFORMATION		
	.500	BETA	.000	STAB	1.000	SREF	5500.0000	50.FT.
	.600	RUD-U	.000	RUD-L	.000	LREF	327.8000	IN.
	.700	ELV-IB	.000	ELV-OB	3.000	BREF	2348.0000	IN.
		S1-2	45.000	S3-4	45.000	XMRP	1339.9100	IN. XC
◇ □ ○		S5-6	45.000	IORB	9.700	YMRP	.0000	IN. YC
						ZMRP	190.7500	IN. ZC
						SCALE	.0300	

INCREMENTAL LIFT FORCE COEFFICIENT(STABILITY AXIS), DCL

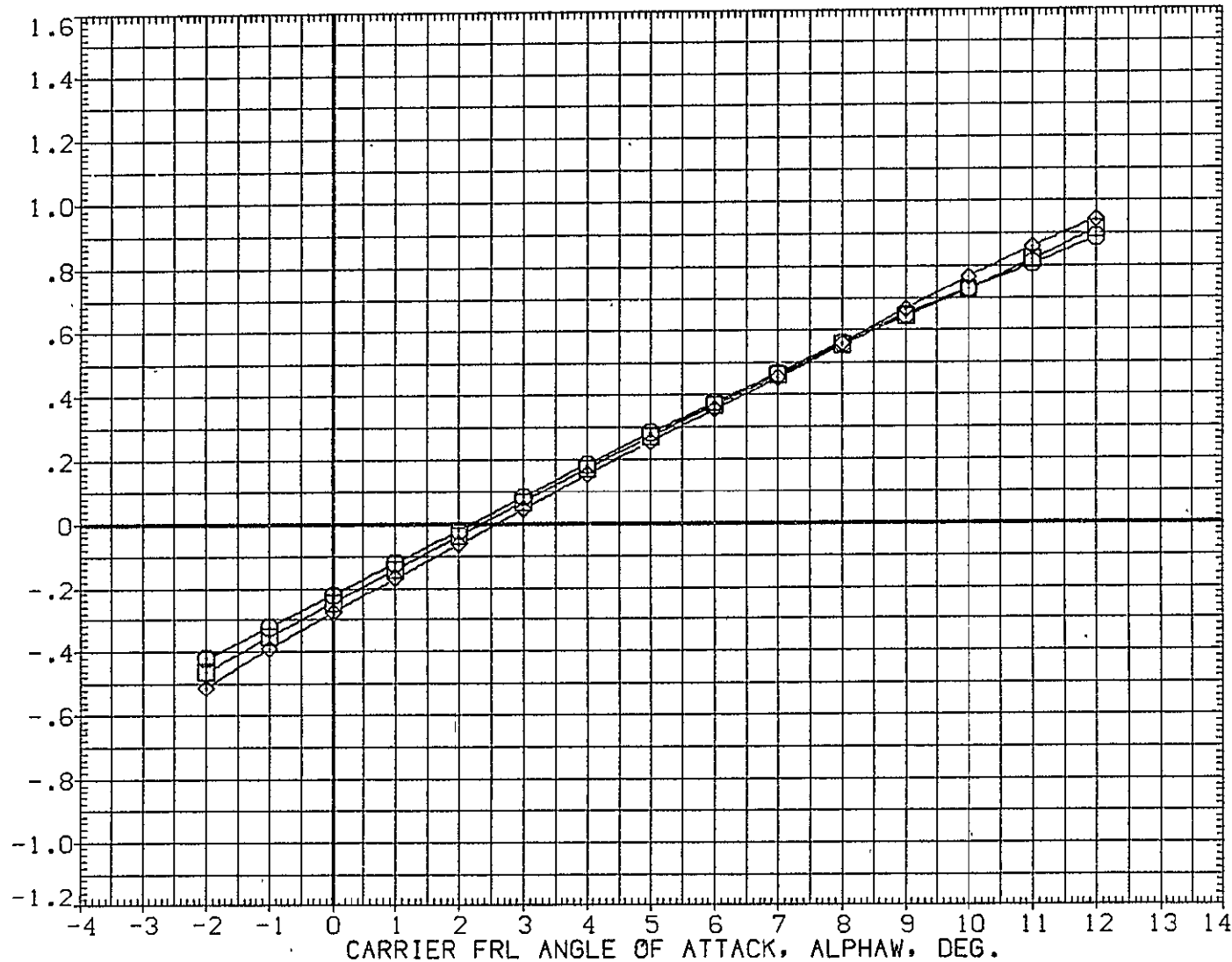


FIG. 15 747+ORB(10 DEG),+TIP FINS +SP45 FLAPS 20 LAUNCH, BASELINE(S=+1)

747

SYMBOL	MACH	PARAMETRIC VALUES				REFERENCE INFORMATION		
○	.500	BETA	.000	STAB	1.000	SREF	5500.0000	SQ.FT.
□	.600	RUD-U	.000	RUD-L	.000	LREF	327.8000	IN.
◇	.700	ELV-IB	.000	ELV-OB	3.000	BREF	2348.0000	IN.
		S1-2	45.000	S3-4	45.000	XMRP	1339.9100	IN. XC
		SS-6	45.000	IORB	9.700	YMRP	.0000	IN. YC
						ZMRP	190.7500	IN. ZC
						SCALE	.0300	

INCREMENTAL LIFT FORCE COEFFICIENT(STABILITY AXIS), DCL

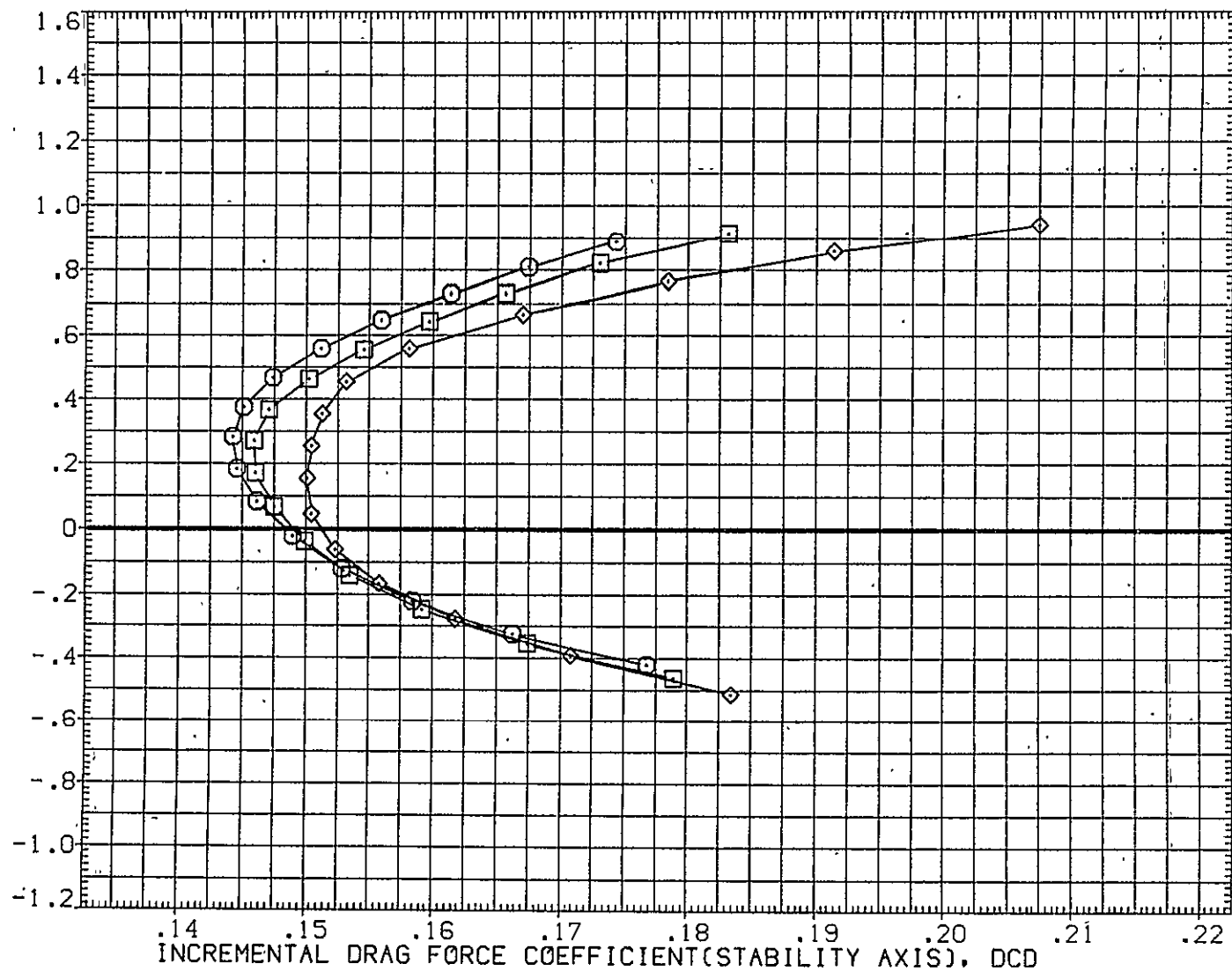


FIG. 15 747+ORB(10 DEG),+TIP FINS +SP45 FLAPS 20 LAUNCH, BASELINE(S=+1)

747

CA5 K1 F20 H15.6 V9.1 MINUS ORB TC5 AT38.1 (EGM065)

SYMBOL	MACH	PARAMETRIC VALUES				REFERENCE INFORMATION		
○	.500	BETA	.000	STAB	1.000	SREF	5500.0000	SQ.FT.
□	.600	RUD-U	.000	RUD-L	.000	LREF	327.8000	IN.
◇	.700	ELV-1B	.000	ELV-0B	3.000	BREF	2348.0000	IN.
		S1-2	45.000	S3-4	45.000	XMRP	1339.9100	IN. XC
		S5-6	45.000	ICRB	9.700	YMRP	.0000	IN. YC
						ZMRP	190.7500	IN. ZC
						SCALE	.0300	

INCREMENTAL LIFT FORCE COEFFICIENT(STABILITY AXIS), DCL

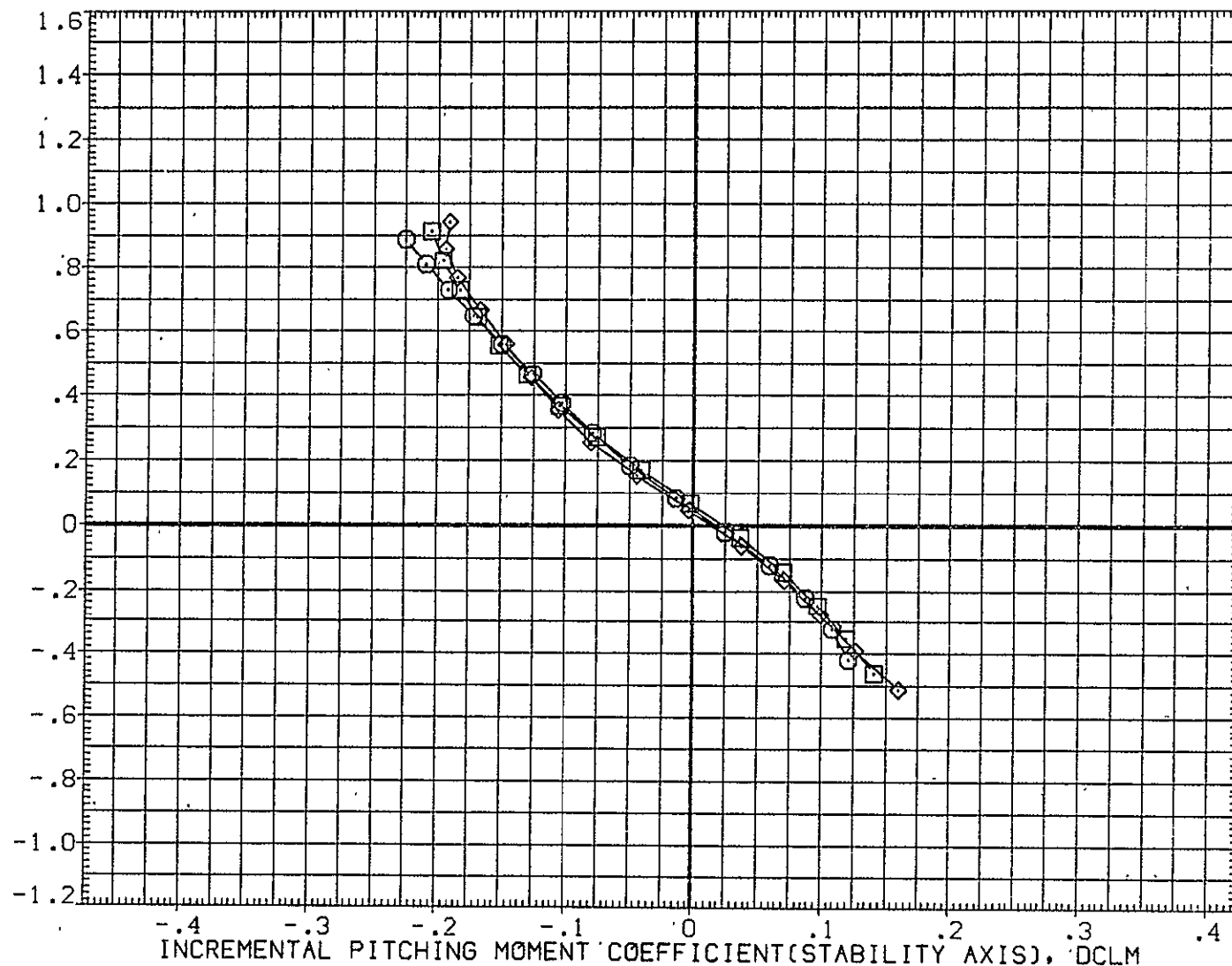


FIG. 15 747+ORB(10 DEG),+TIP FINS +SP45 FLAPS 20 LAUNCH, BASELINE(S=+1)

747

SYMBOL	MACH	PARAMETRIC VALUES				REFERENCE INFORMATION		
○	.500	BETA	.000	STAB	1.000	SREF	5500.0000	SQ.FT.
□	.600	RUD-U	.000	RUD-L	.000	LREF	327.8000	IN.
◇	.700	ELV-1B	.000	ELV-OB	3.000	BREF	2348.0000	IN.
		S1-2	45.000	S3-4	45.000	XMRF	1339.9100	IN. XC
		S5-6	45.000	10RB	9.700	YMRF	.0000	IN. YC
						ZMRF	190.7500	IN. ZC
						SCALE	.0300	

CARRIER FRL ANGLE OF ATTACK, ALPHA, DEG.

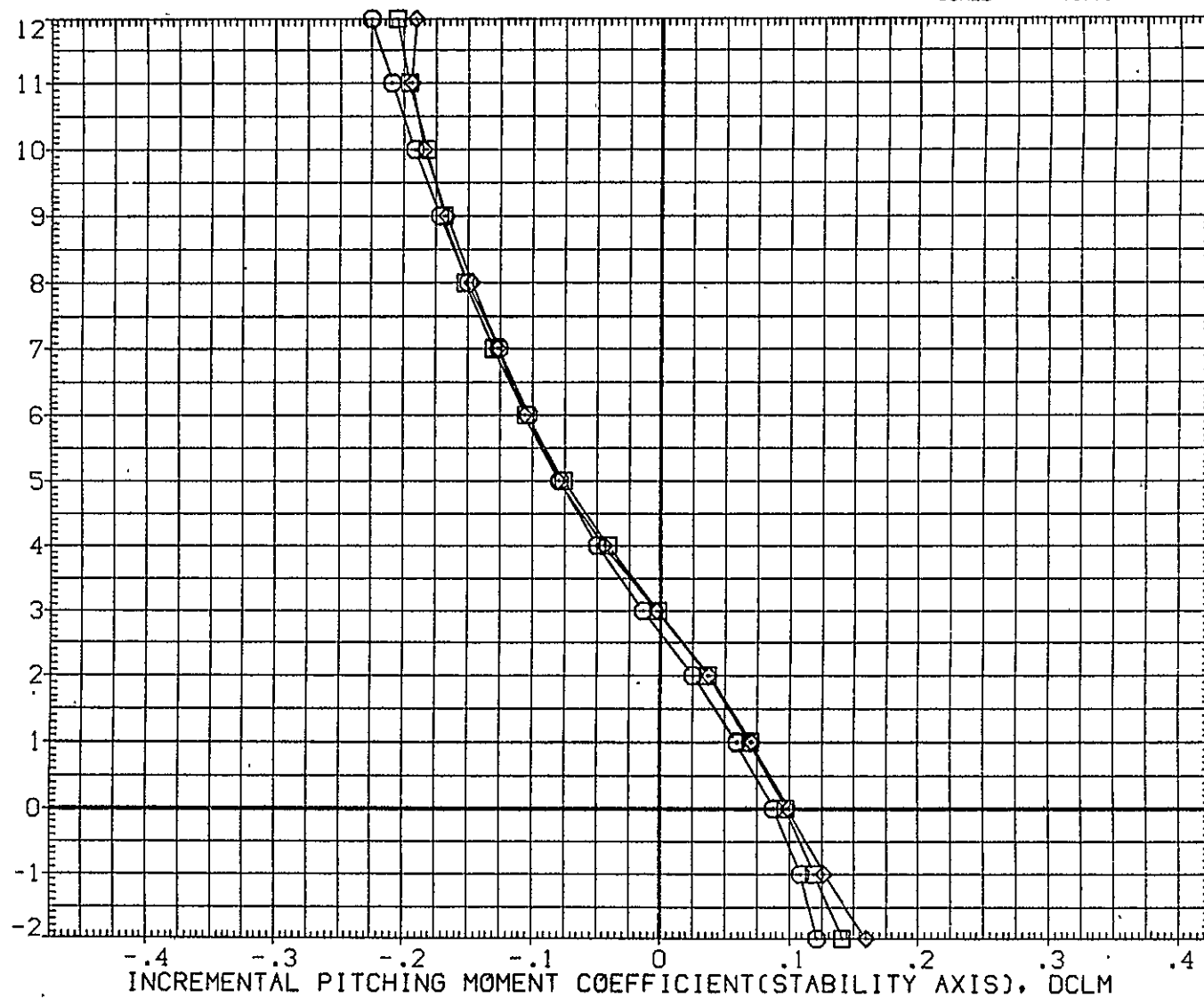


FIG. 15 747+ORB(10 DEG),+TIP FINS +SP45 FLAPS 20 LAUNCH, BASELINE(S=+1) 747

CA5 0RB TC5 AT38.1 (PRES. K1 F20 H15.6 V9.1)(DGM065)

SYMBOL	MACH	PARAMETRIC VALUES				REFERENCE INFORMATION	
○	.500	BETA	.000	STAB	1.000	SREF	2690.0000 SQ.FT.
□	.600	RUD-U	.000	RUD-L	.000	LREF	474.8100 IN.
◇	.700	ELV-1B	.000	ELV-0B	3.000	BREF	936.6800 IN.
		S1-2	45.000	S3-4	45.000	XMRP	1109.0000 IN. X0
		S5-6	45.000	IORB	9.700	YMRP	.0000 IN. Y0
						ZMRP	375.0000 IN. Z0
						SCALE	.0300

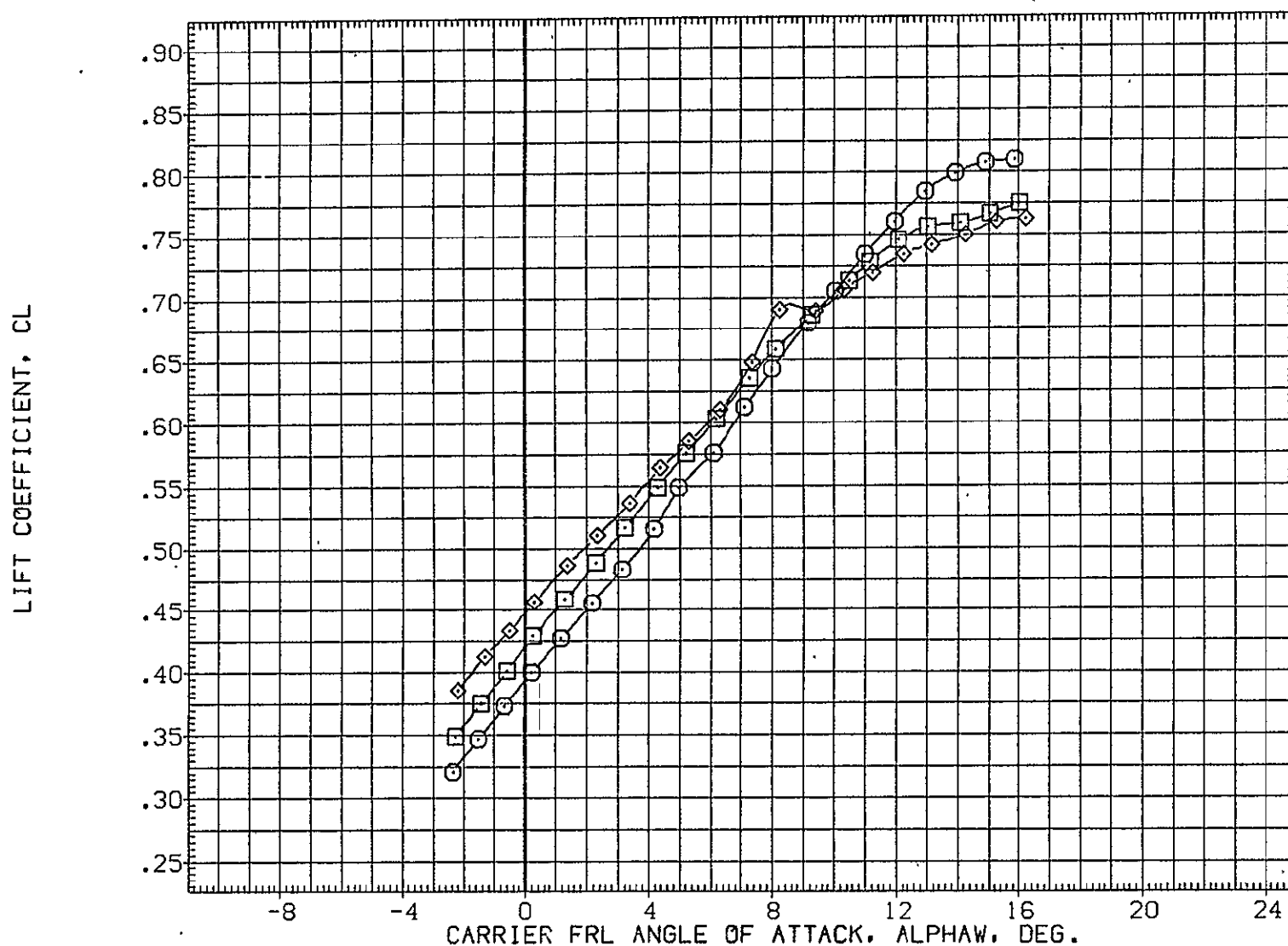


FIG. 16 747+0RB(10 DEG),+TIP FINS +SP45 FLAPS 20 LAUNCH, BASELINE(S=+1)

0RB

SYMBOL	MACH	PARAMETRIC VALUES				REFERENCE INFORMATION		
○	.500	BETA	.000	STAB	1.000	SREF	2690.0000	SQ.FT.
□	.600	RUD-U	.000	RUD-L	.000	LREF	474.8100	IN.
◇	.700	ELV-1B	.000	ELV-0B	3.000	BREF	936.6800	IN.
		S1-2	45.000	S3-4	45.000	XMRP	1109.0000	IN. X0
		S5-6	45.000	10RB	9.700	YMRP	.0000	IN. Y0
						ZMRP	375.0000	IN. Z0
						SCALE	.0300	

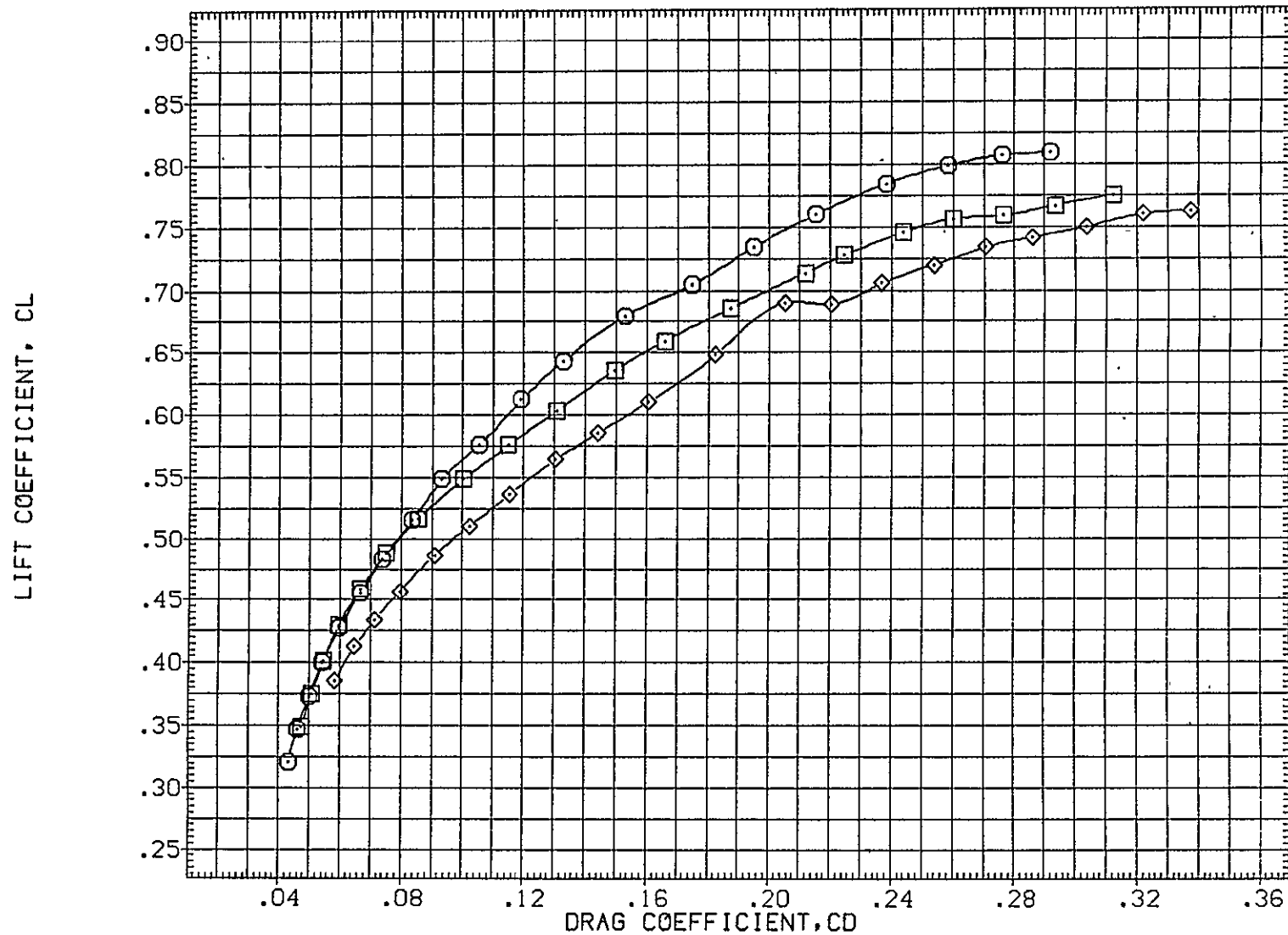


FIG. 16 747+0RB(10 DEG),+TIP FINS +SP45 FLAPS 20 LAUNCH, BASELINE(S=+1) ORB

CA5 ORB TC5 AT38.1 (PRES. K1 F20 H15.6 V9.1)(DGM065)

SYMBOL	MACH	PARAMETRIC VALUES				REFERENCE INFORMATION		
○	.500	BETA	.000	STAB	1.000	SREF	2690.0000	SQ.FT.
□	.600	RUD-U	.000	RUD-L	.000	LREF	474.8100	IN.
◇	.700	ELV-IB	.000	ELY-OB	3.000	BREF	936.6800	IN.
		S1-2	45.000	S3-4	45.000	XMRP	1109.0000	IN. X0
		SS-6	45.000	IORB	9.700	YMRP	.0000	IN. Y0
						ZMRP	375.0000	IN. Z0
						SCALE	.0300	

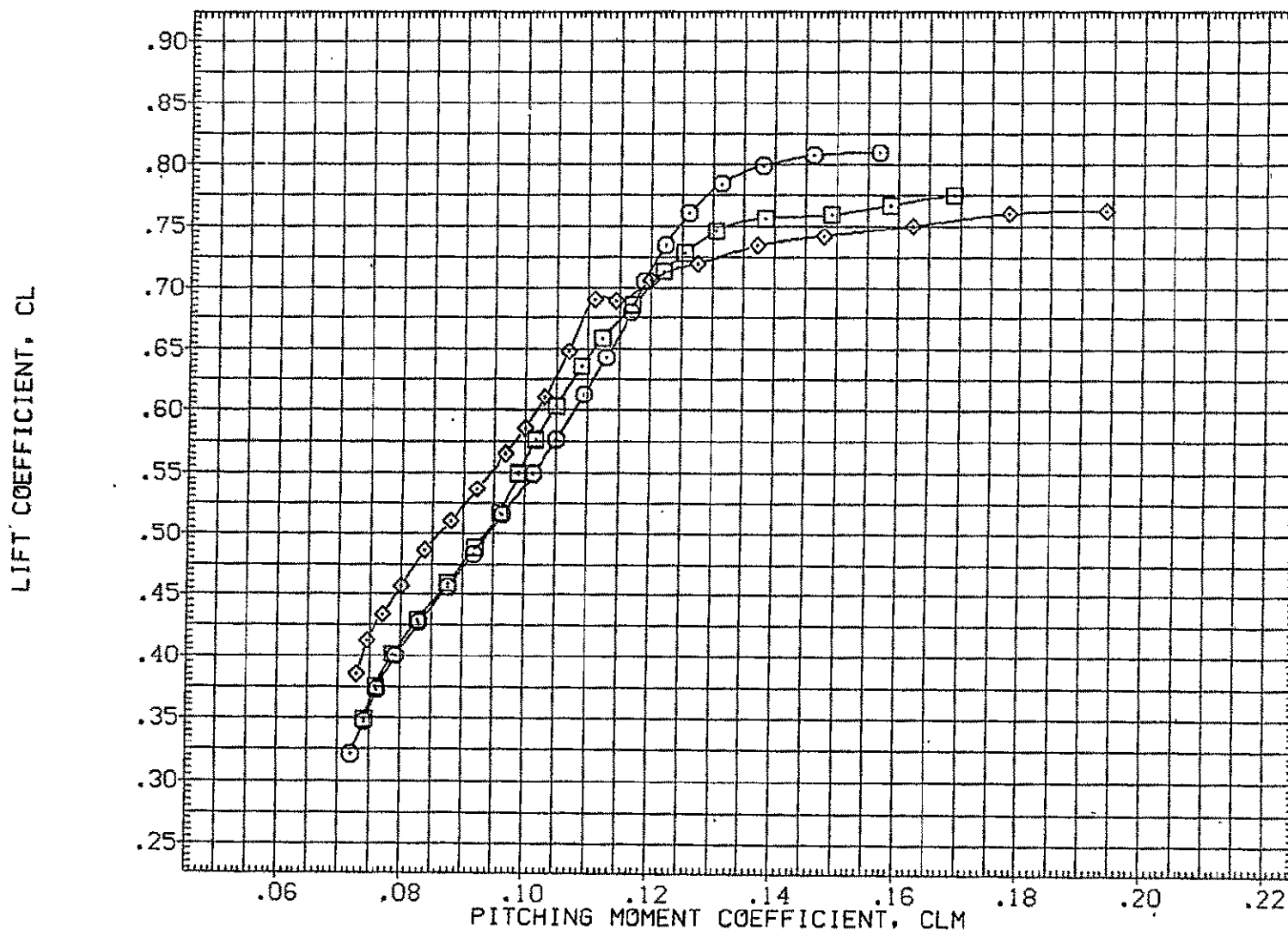


FIG. 16 747+ORB(10 DEG),+TIP FINS +SP45 FLAPS 20 LAUNCH, BASELINE(S=+1) ORB

SYMBOL	MACH	PARAMETRIC VALUES				REFERENCE INFORMATION		
○	.500	BETA	.000	STAB	1.000	SREF	2690.0000	SQ.FT.
□	.600	RUD-U	.000	RUD-L	.000	LREF	474.8100	IN.
◇	.700	ELV-1B	.000	ELV-0B	3.000	BREF	936.6800	IN.
		S1-2	45.000	S3-4	45.000	XMRP	1109.0000	IN. X0
		S5-6	45.000	10RB	9.700	YMRP	.0000	IN. Y0
						ZMRP	375.0000	IN. Z0
						SCALE	.0300	

CARRIER FRL ANGLE OF ATTACK, ALPHAW, DEG.

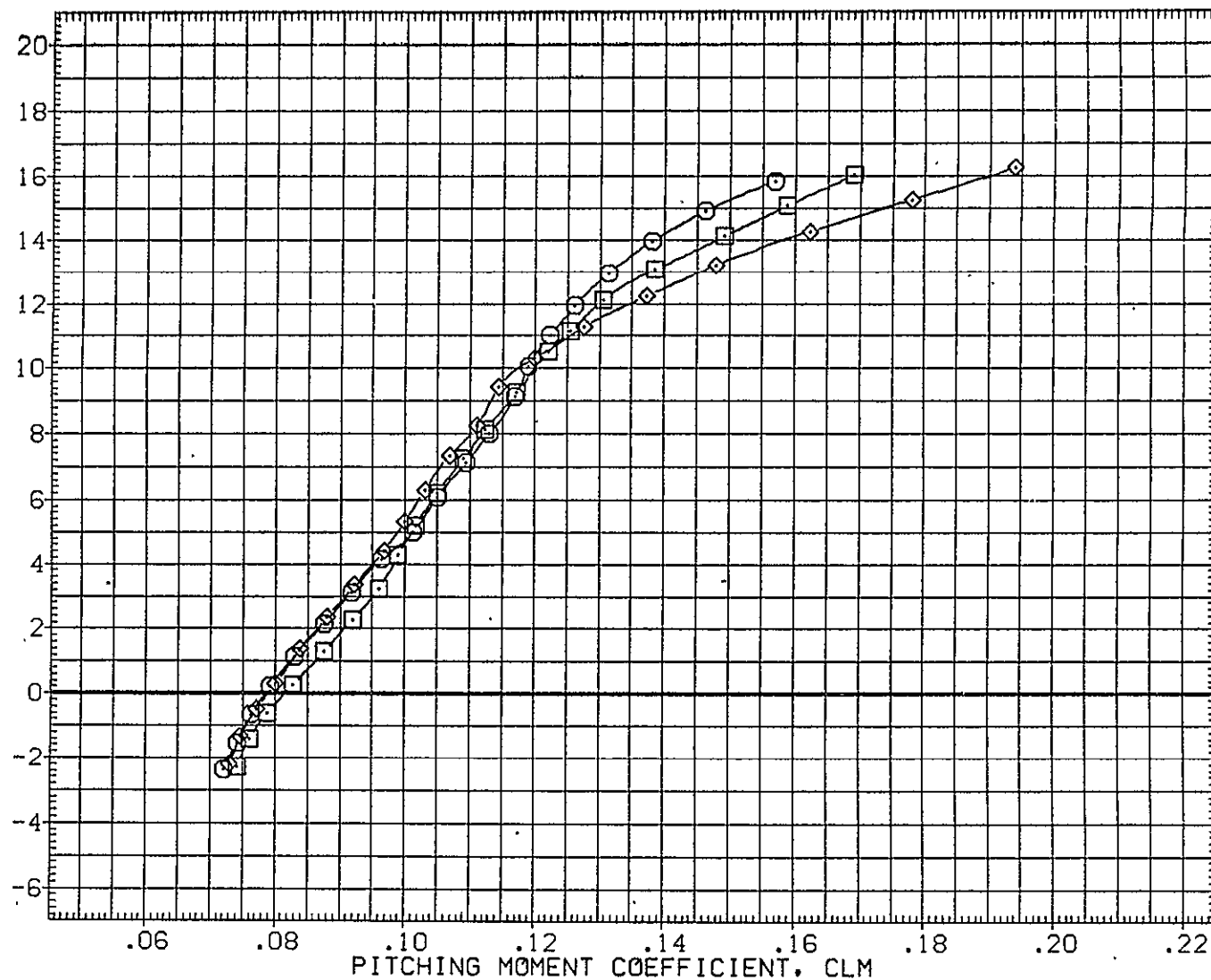


FIG. 16 747+0RB(10 DEG),+TIP FINS +SP45 FLAPS 20 LAUNCH, BASELINE(S=+1) 0RB

CA5 K1 F20 H15.6 V9.1 (PLUS, ORB TC5 AT38.1)(RGM068)

SYMBOL	MACH	PARAMETRIC VALUES				REFERENCE INFORMATION		
○	.500	BETA	.000	STAB	-2.000	SREF	5500.0000	SQ.FT.
□	.600	RUD-U	.000	RUD-L	.000	LREF	327.8000	IN.
◇	.700	ELV-1B	.000	ELV-0B	3.000	BREF	2348.0000	IN.
		S1-2	45.000	S3-4	45.000	XMRP	1339.9100	IN. XC
		S5-6	45.000	10RB	9.700	YMRP	.0000	IN. YC
						ZMRP	190.7500	IN. ZC
						SCALE	.0300	

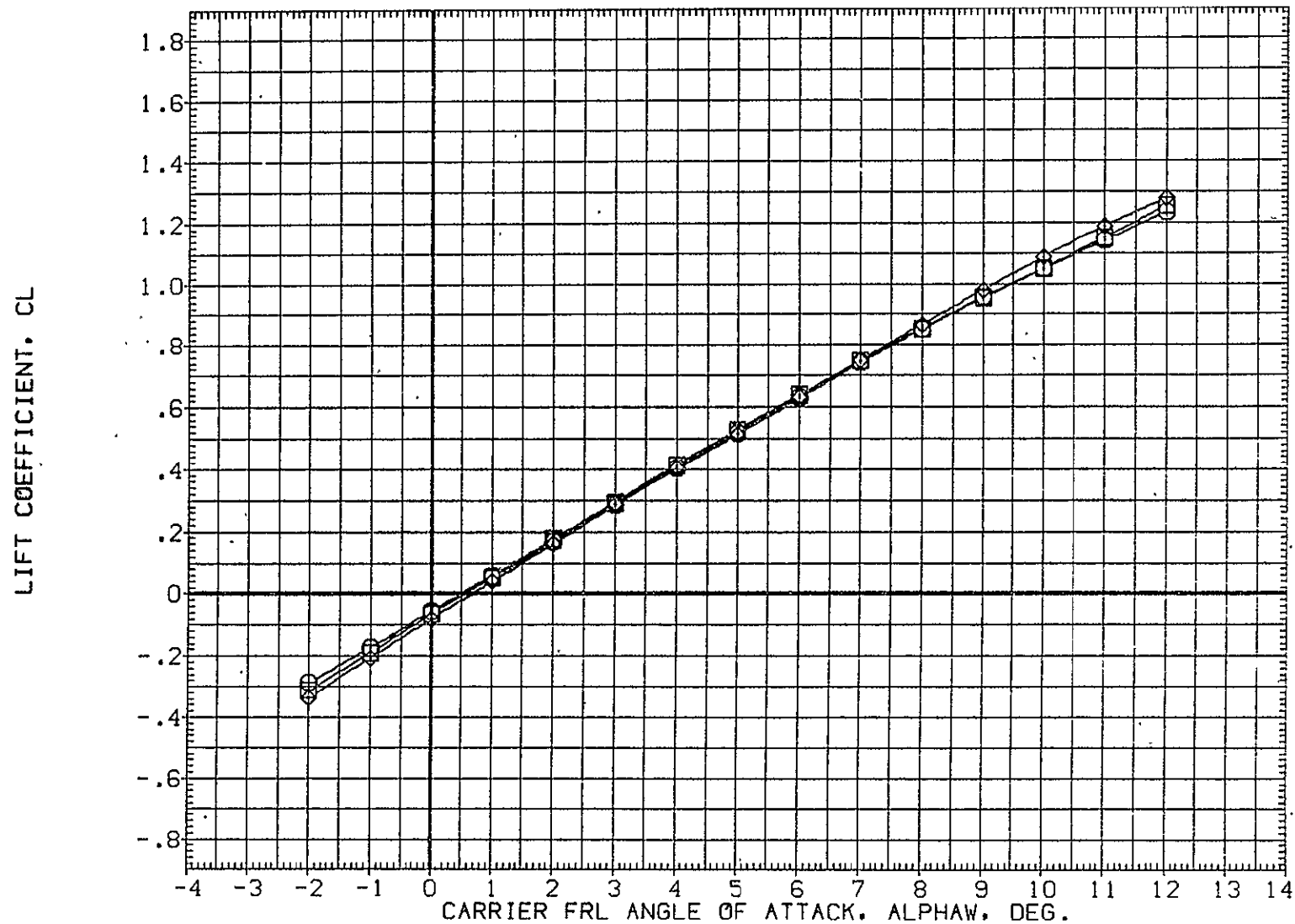


FIG. 17 747+ORB(10 DEG),+TIP FINS +SP45 FLAPS 20 LAUNCH, (S=-2)

TOTAL

SYMBOL

○
□
◇

MACH

.500
.600
.700

PARAMETRIC VALUES

BETA	.000	STAB	-2.000
RUD-U	.000	RUD-L	.000
ELV-1B	.000	ELV-0B	3.000
S1-2	45.000	S3-4	45.000
S5-6	45.000	10RB	9.700

REFERENCE INFORMATION

SREF	5500.0000	SQ.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

LIFT COEFFICIENT, CL

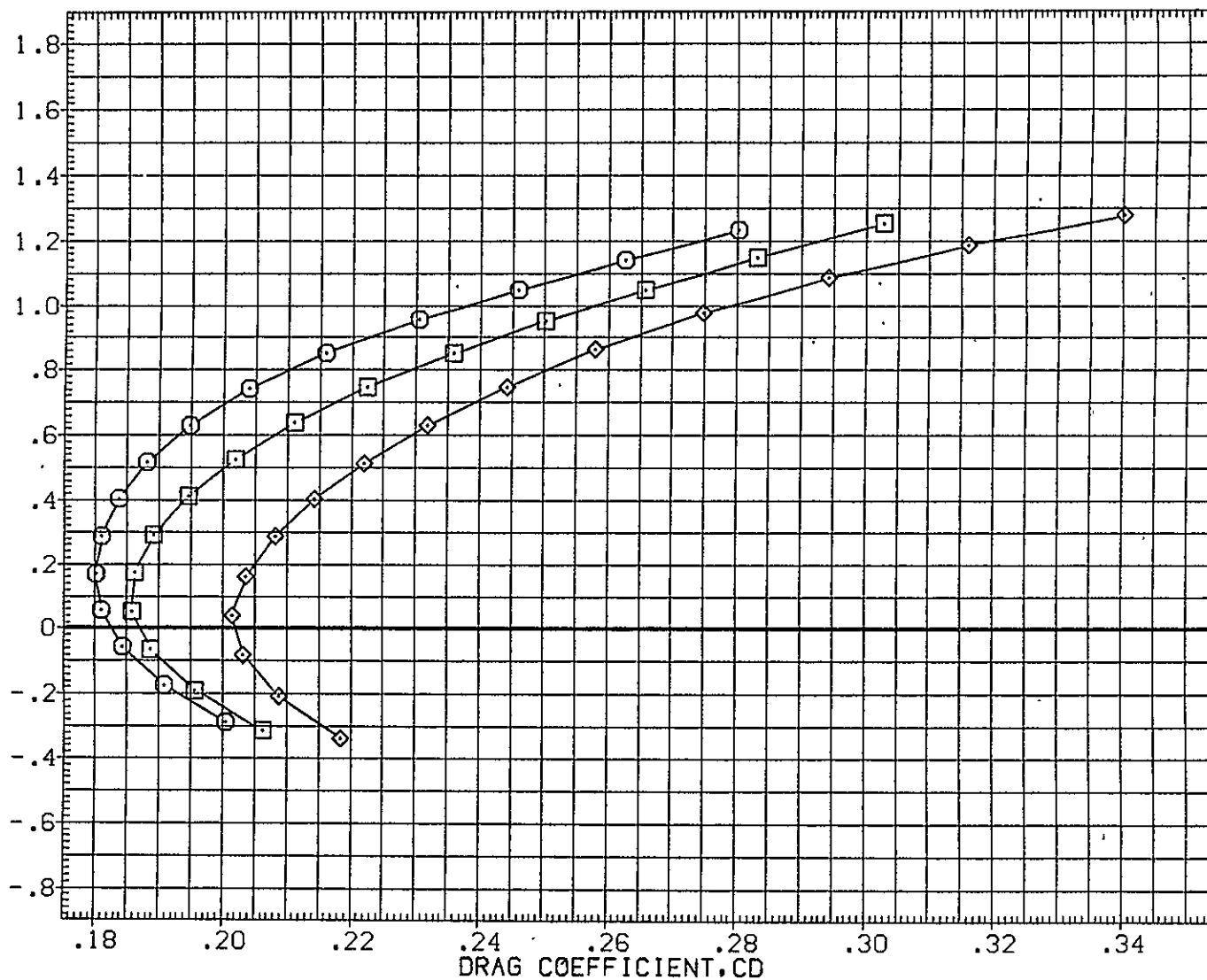


FIG. 17 747+0RB(10 DEG),+TIP FINS +SP45 FLAPS 20 LAUNCH, (S=-2)

TOTAL

PAGE

66

CA5 K1 F20 H15.6 V9.1 (PLUS. 0RB TC5 AT38.1)(RGM068)

SYMBOL

○
□
◇

MACH

.500
.600
.700

BETA
RUD-U
ELV-1B
S1-2
S5-6

PARAMETRIC VALUES

.000 STAB -2.000
.000 RUD-L .000
.000 ELV-0B 3.000
45.000 S3-4 45.000
45.000 10RB 9.700

REFERENCE INFORMATION

SREF 5500.0000 SQ.FT.
LREF 327.8000 IN.
BREF 2348.0000 IN.
XMRP 1339.9100 IN. XC
YMRP .0000 IN. YC
ZMRP 190.7500 IN. ZC
SCALE .0300

LIFT COEFFICIENT, CL

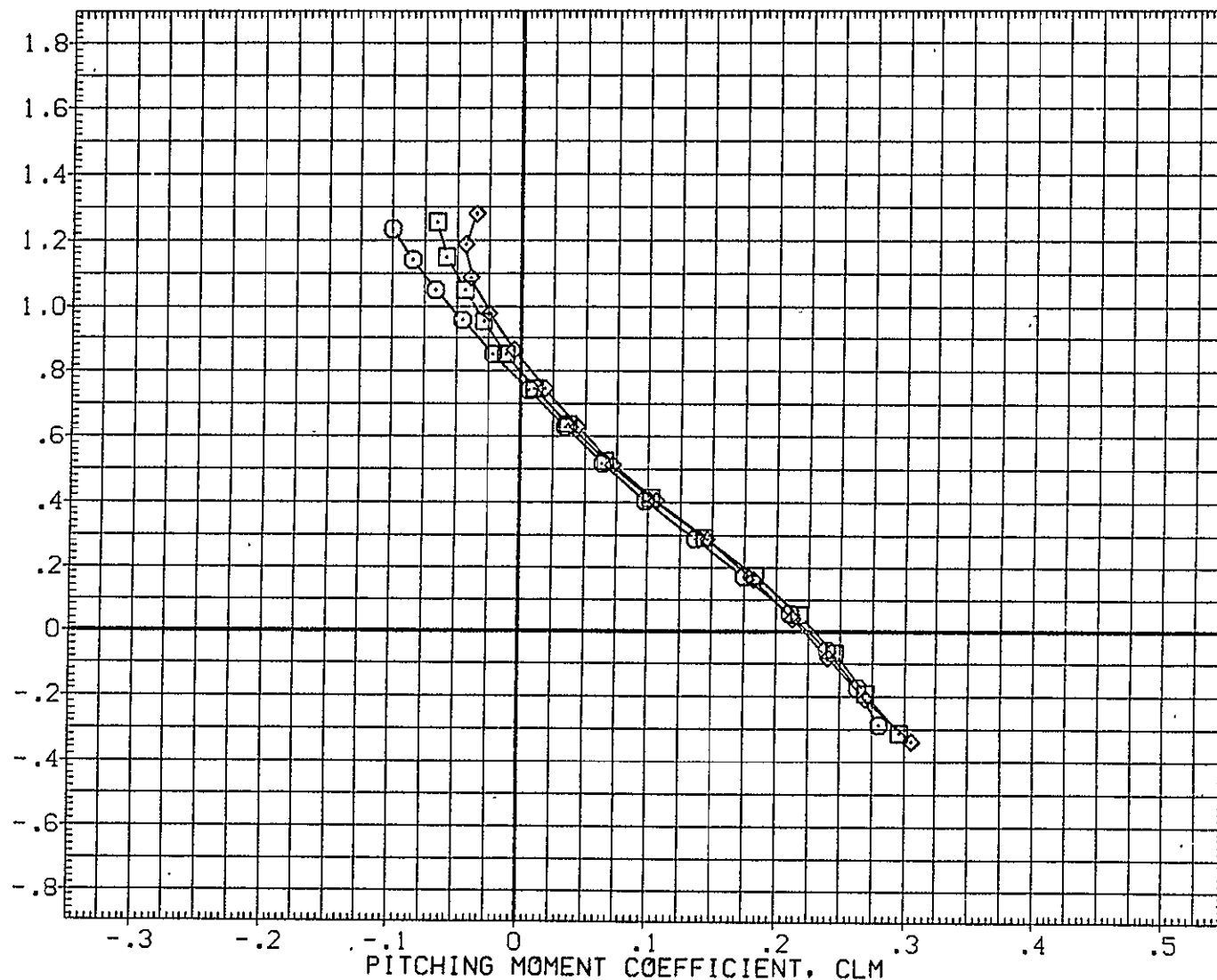


FIG. 17 747+0RB(10 DEG),+TIP FINS +SP45 FLAPS 20 LAUNCH, (S=-2)

TOTAL

SYMBOL	MACH	PARAMETRIC VALUES				REFERENCE INFORMATION		
○	.500	BETA	.000	STAB	-2.000	SREF	5500.0000	SQ.FT.
□	.600	RUD-U	.000	RUD-L	.000	LREF	327.8000	IN.
◇	.700	ELV-1B	.000	ELV-0B	3.000	BREF	2348.0000	IN.
		S1-2	45.000	S3-4	45.000	XM RP	1339.9100	IN. XC
		S5-6	45.000	10RB	9.700	YM RP	.0000	IN. YC
						ZM RP	190.7500	IN. ZC
						SCALE	.0300	

CARRIER FRL ANGLE OF ATTACK, ALPHA, DEG.

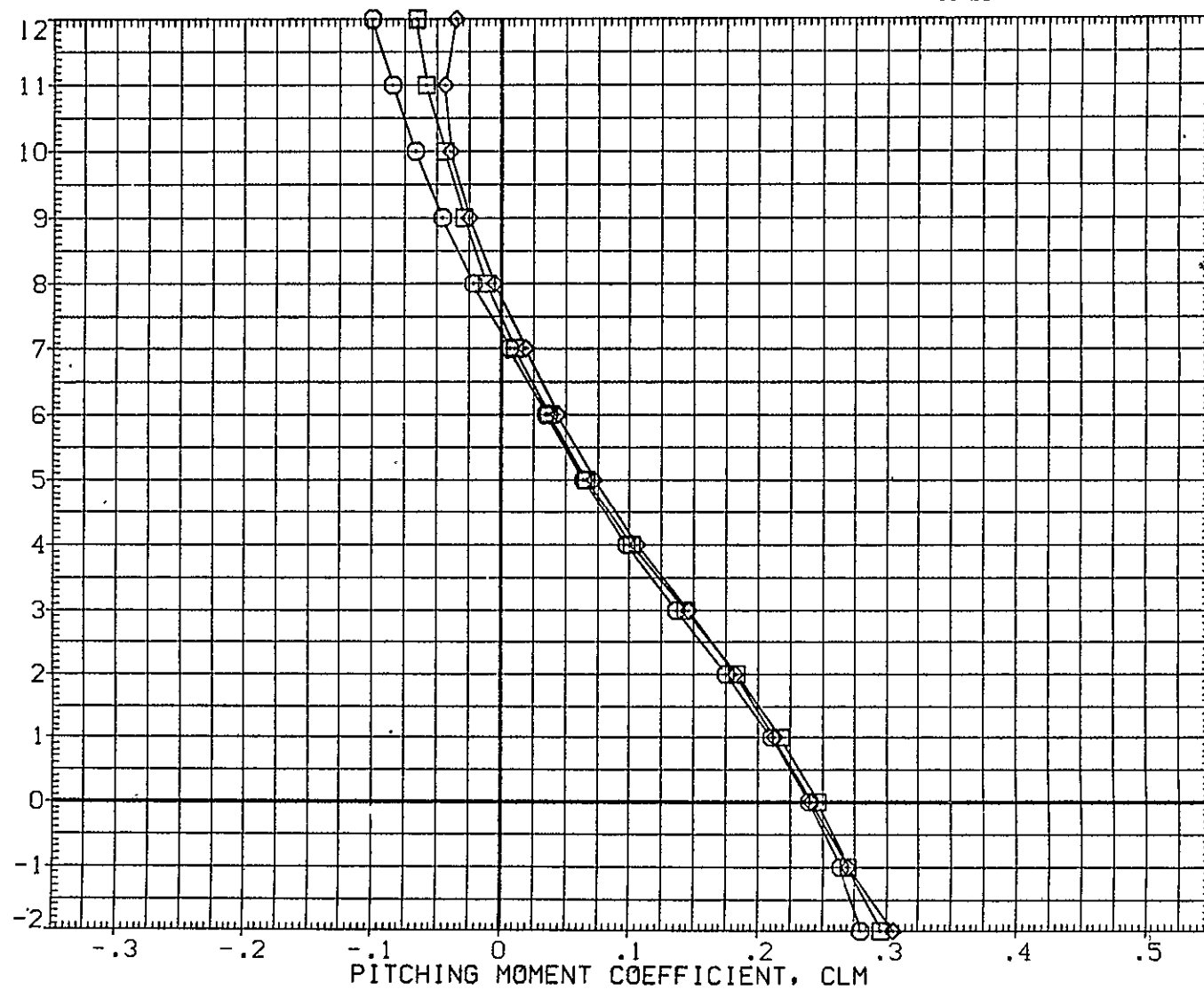


FIG. 17 747+0RB(10 DEG),+TIP FINS +SP45 FLAPS 20 LAUNCH, (S=-2)

TOTAL

PAGE

68

CA5 K1 F20 H15.6 V9.1 MINUS ORB TC5 AT38.1 (BGM068)

SYMBOL	MACH	PARAMETRIC VALUES				REFERENCE INFORMATION	
○	.500	BETA	.000	STAB	-2.000	SREF	5500.0000 SQ.FT.
□	.600	RUD-U	.000	RUD-L	.000	LREF	327.8000 IN.
◇	.700	ELV-IB	.000	ELV-OB	3.000	BREF	2348.0000 IN.
		S1-2	45.000	S3-4	45.000	XMRP	1339.9100 IN. XC
		S5-6	45.000	IORB	9.700	YMRP	.0000 IN. YC
						ZMRP	190.7500 IN. ZC
						SCALE	.0300

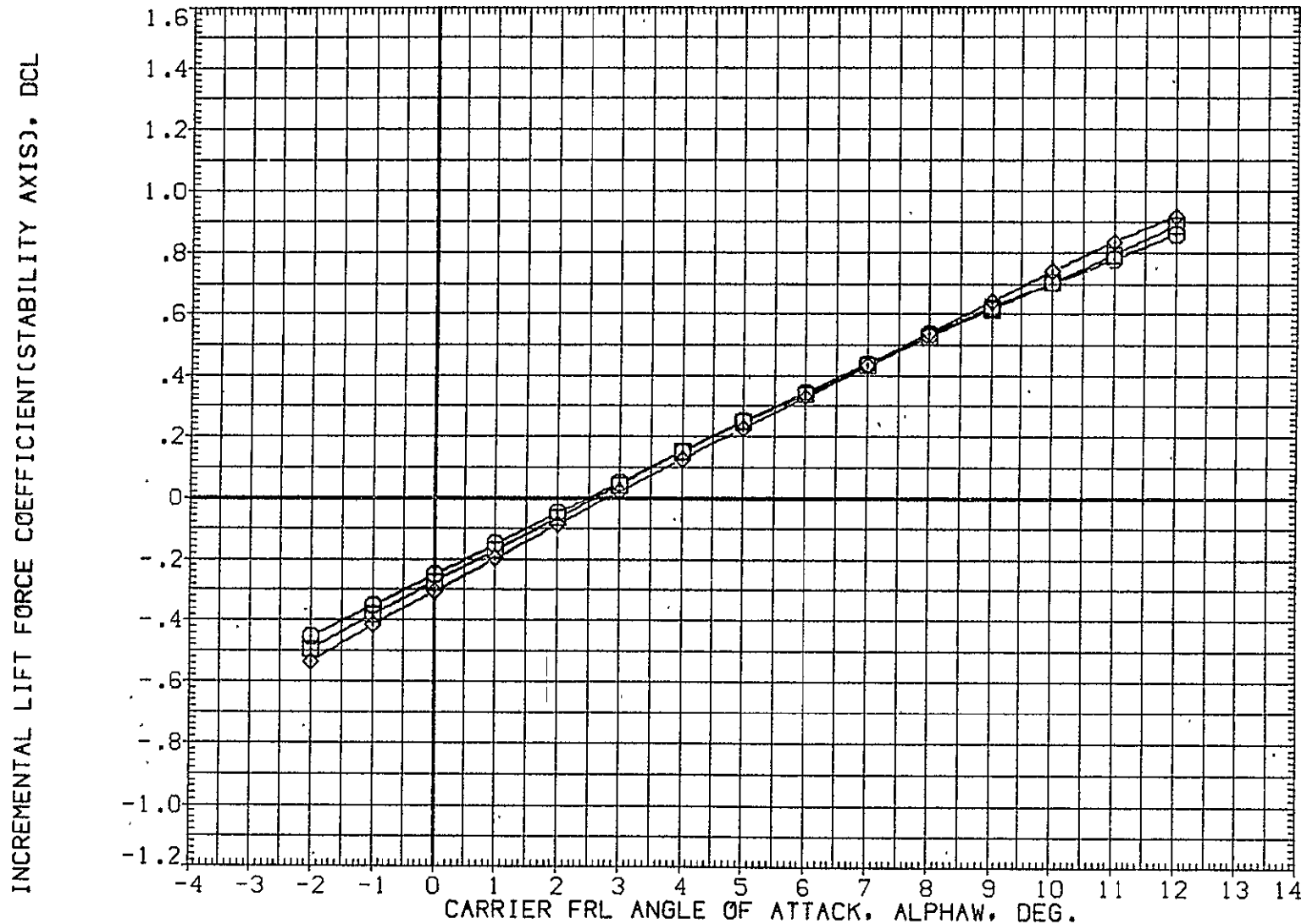


FIG. 18 747+ORB(10 DEG),+TIP FINS +SP45 FLAPS 20 LAUNCH, (S=-2)

747

SYMBOL	MACH	PARAMETRIC VALUES				REFERENCE INFORMATION		
○	.500	BETA	.000	STAB	-2.000	SREF	5500.0000	SQ.FT.
□	.600	RUD-U	.000	RUD-L	.000	LREF	327.8000	IN.
◇	.700	ELV-1B	.000	ELV-0B	3.000	BREF	2348.0000	IN.
		S1-2	45.000	S3-4	45.000	XMRP	1339.9100	IN. XC
		S5-6	45.000	IORB	9.700	YMRP	.0000	IN. YC
						ZMRP	190.7500	IN. ZC
						SCALE	.0300	

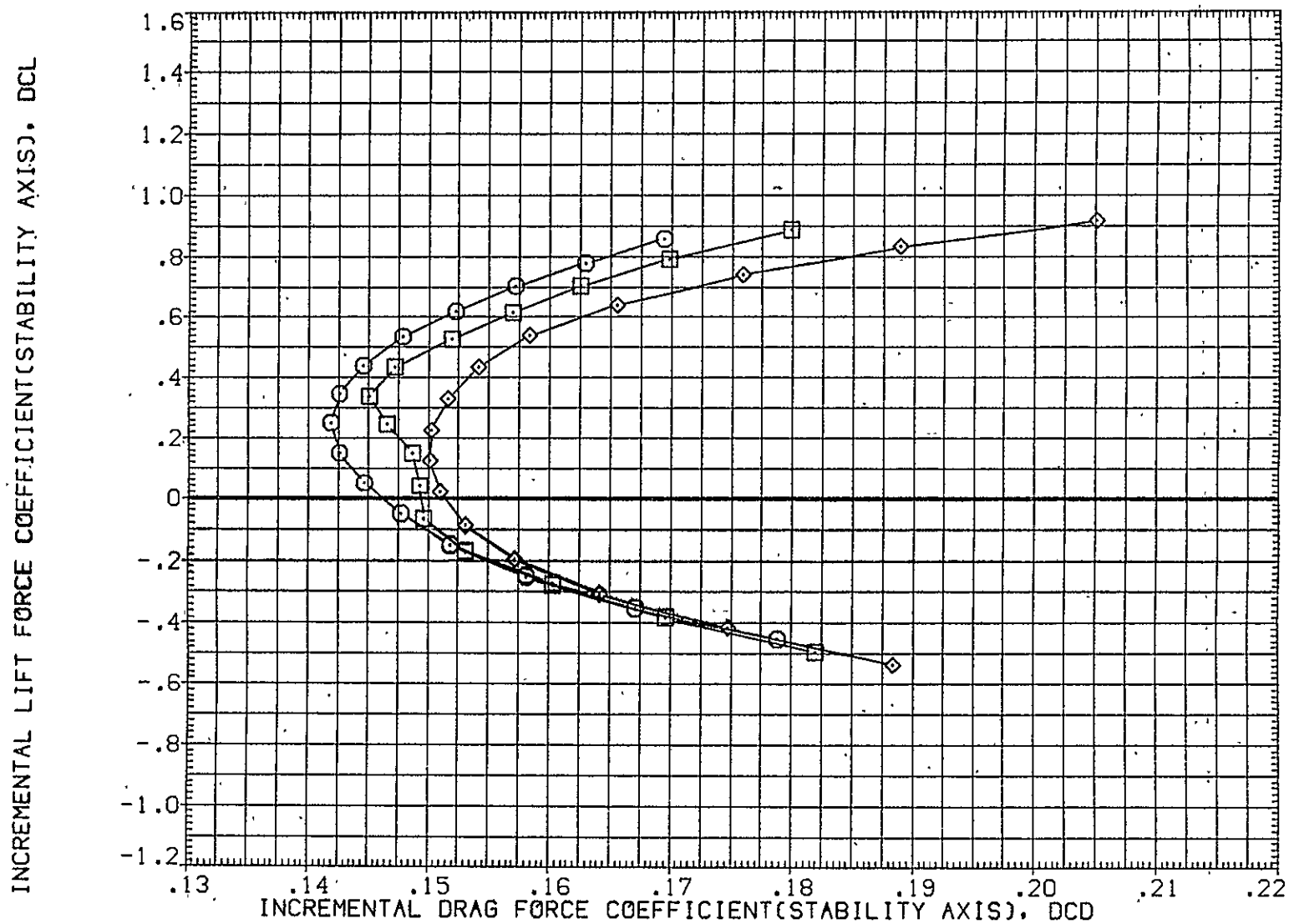


FIG. 18 747+ORB(10 DEG),+TIP FINS +SP45 FLAPS 20 LAUNCH, (S=-2)

747

PAGE

70

CA5 K1 F20 H15.6 V9.1 MINUS ORB TC5 AT38.1 (BGM068)

SYMBOL	MACH	PARAMETRIC VALUES				REFERENCE INFORMATION		
○	.500	BETA	.000	STAB	-2.000	SREF	5500.0000	SQ.FT.
□	.600	RUD-U	.000	RUD-L	.000	LREF	327.8000	IN.
◇	.700	ELV-1B	.000	ELV-OB	3.000	BREF	2348.0000	IN.
		S1-2	45.000	S3-4	45.000	XMRP	1339.9100	IN. XC
		S5-6	45.000	IORB	9.700	YMRP	.0000	IN. YC
						ZMRP	190.7500	IN. ZC
						SCALE	.0300	

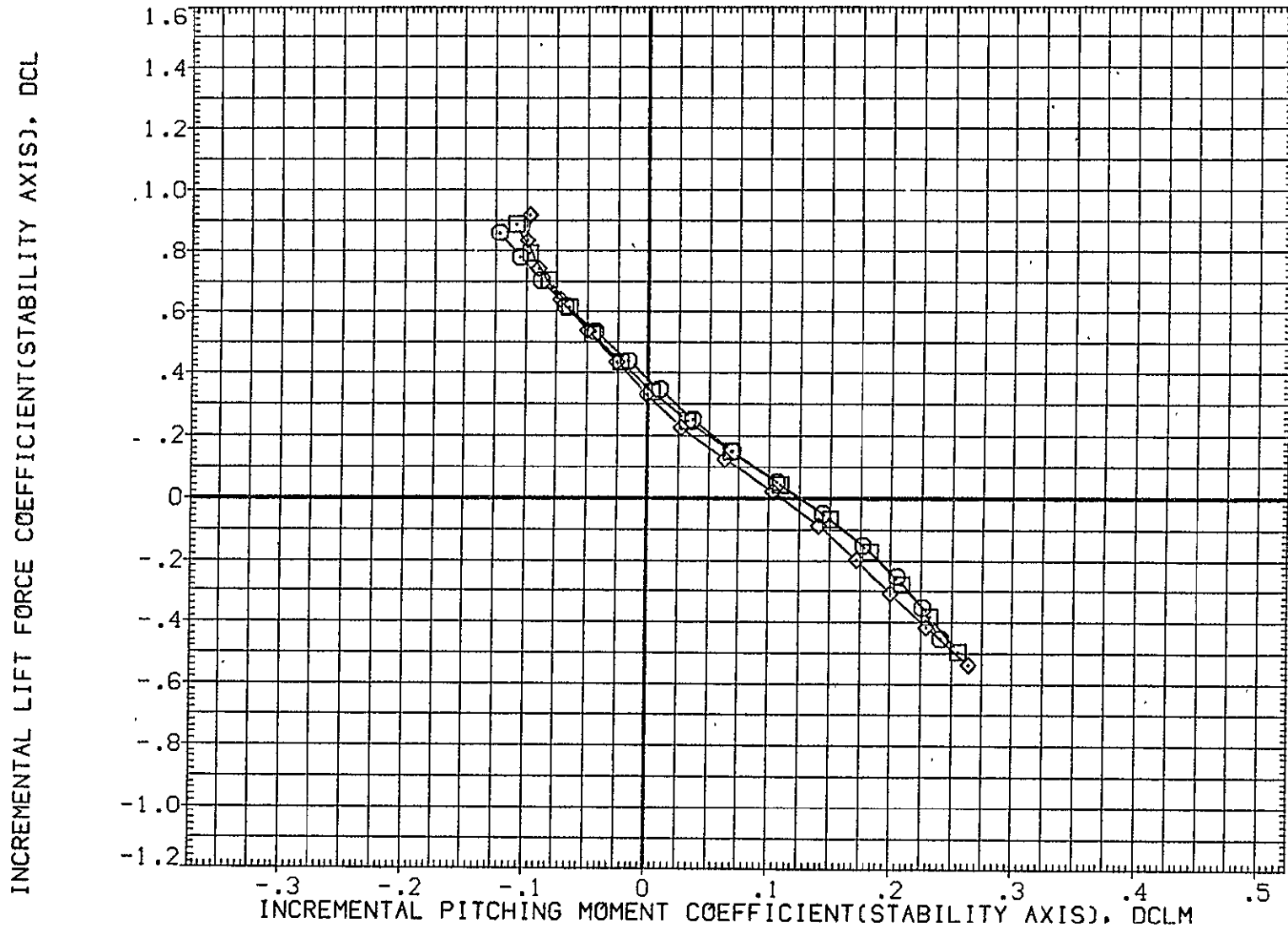


FIG. 18 747+ORB(10 DEG),+TIP FINS +SP45 FLAPS 20 LAUNCH, (S=-2)

747

SYMBOL
○
□
◇

MACH

.500
.600
.700

BETA
RUD-U
ELV-1B
S1-2
S5-6

PARAMETRIC VALUES

.000 STAB -2.000
.000 RUD-L .000
.000 ELV-0B 3.000
45.000 S3-4 45.000
45.000 10RB 9.700

REFERENCE INFORMATION

SREF 5500.0000 SQ.FT.
LREF 327.8000 IN.
BREF 2348.0000 IN.
XMRP 1339.9100 IN. XC
YMRP .0000 IN. YC
ZMRP 190.7500 IN. ZC
SCALE .0300

CARRIER FRL ANGLE OF ATTACK, ALPHA, DEG.

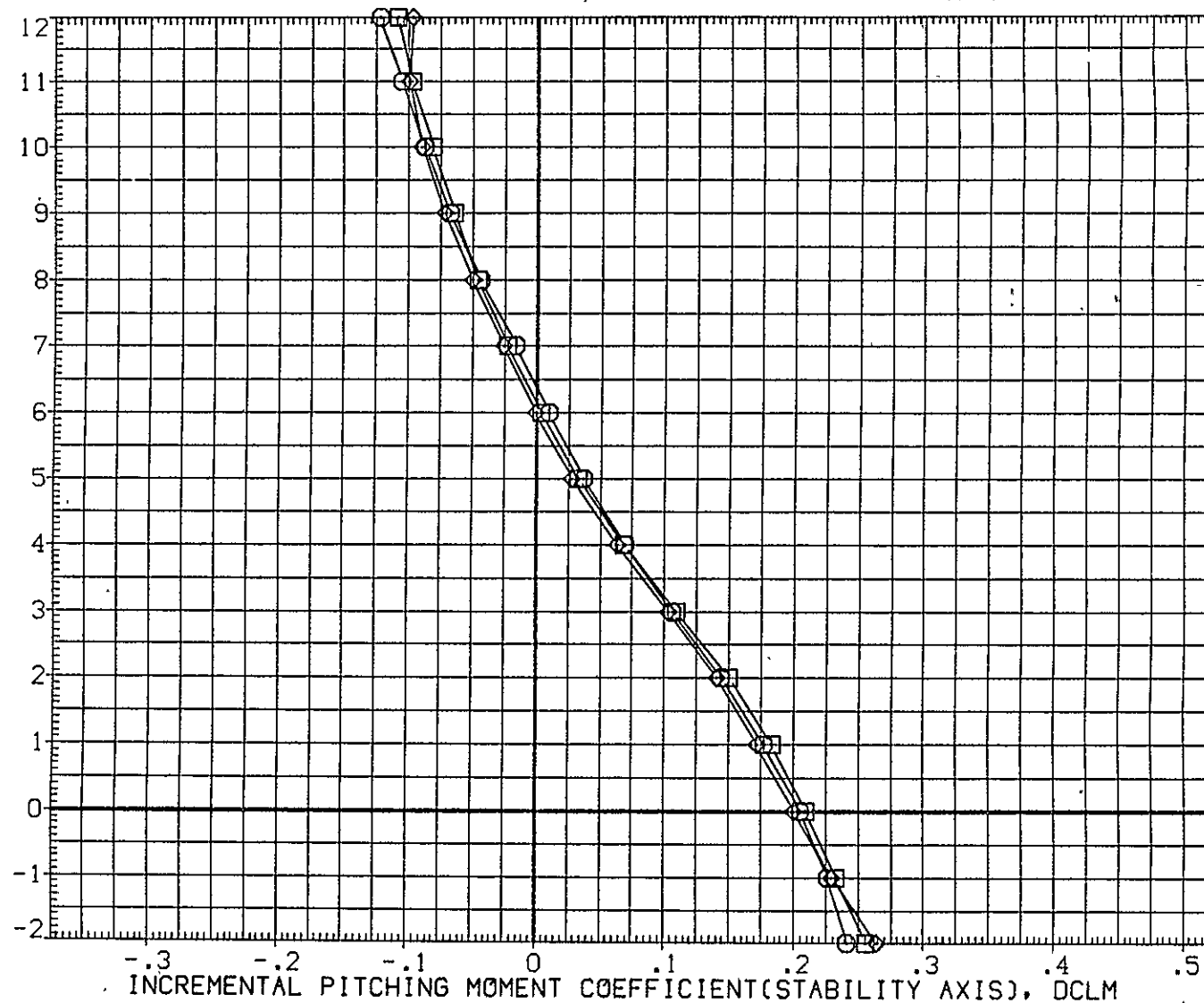


FIG. 18 747+0RB(10 DEG),+TIP FINS +SP45 FLAPS 20 LAUNCH, (S=-2)

747

PAGE

72

CA5 ORB TC5 AT38.1 (PRES. K1 F20 H15.6 V9.1)(YGM068)

SYMBOL	MACH	PARAMETRIC VALUES			
○	.501	BETA	.000	STAB	-2.000
□	.600	RUD-U	.000	RUD-L	.000
◇	.700	ELV-1B	.000	ELV-0B	3.000
		S1-2	45.000	S3-4	45.000
		S5-6	45.000	IORB	9.700

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN. X0
YMRP	.0000	IN. Y0
ZMRP	375.0000	IN. Z0
SCALE	.0300	

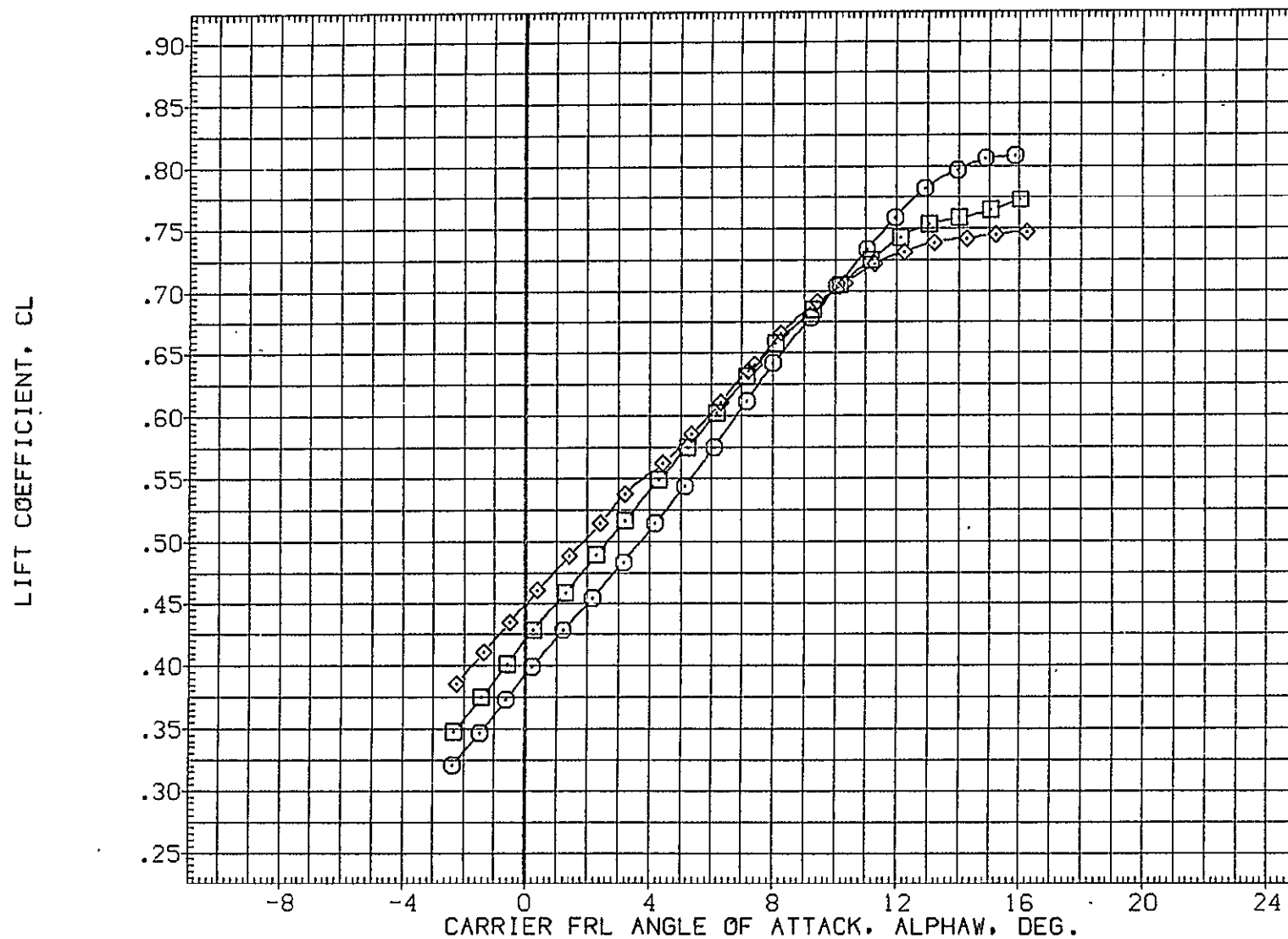


FIG. 19 747+ORB(10 DEG),+TIP FINS +SP45 FLAPS 20 LAUNCH, (S=-2)

ORB

SYMBOL	MACH	PARAMETRIC VALUES			
○	.501	BETA	.000	STAB	-2.000
□	.600	RUD-U	.000	RUD-L	.000
◇	.700	ELV-1B	.000	ELV-OB	3.000
		S1-2	45.000	S3-4	45.000
		S5-6	45.000	ICRB	9.700

REFERENCE INFORMATION		
SREF	2690.0000	50.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN. X0
YMRP	.0000	IN. Y0
ZMRP	375.0000	IN. Z0
SCALE	.0300	

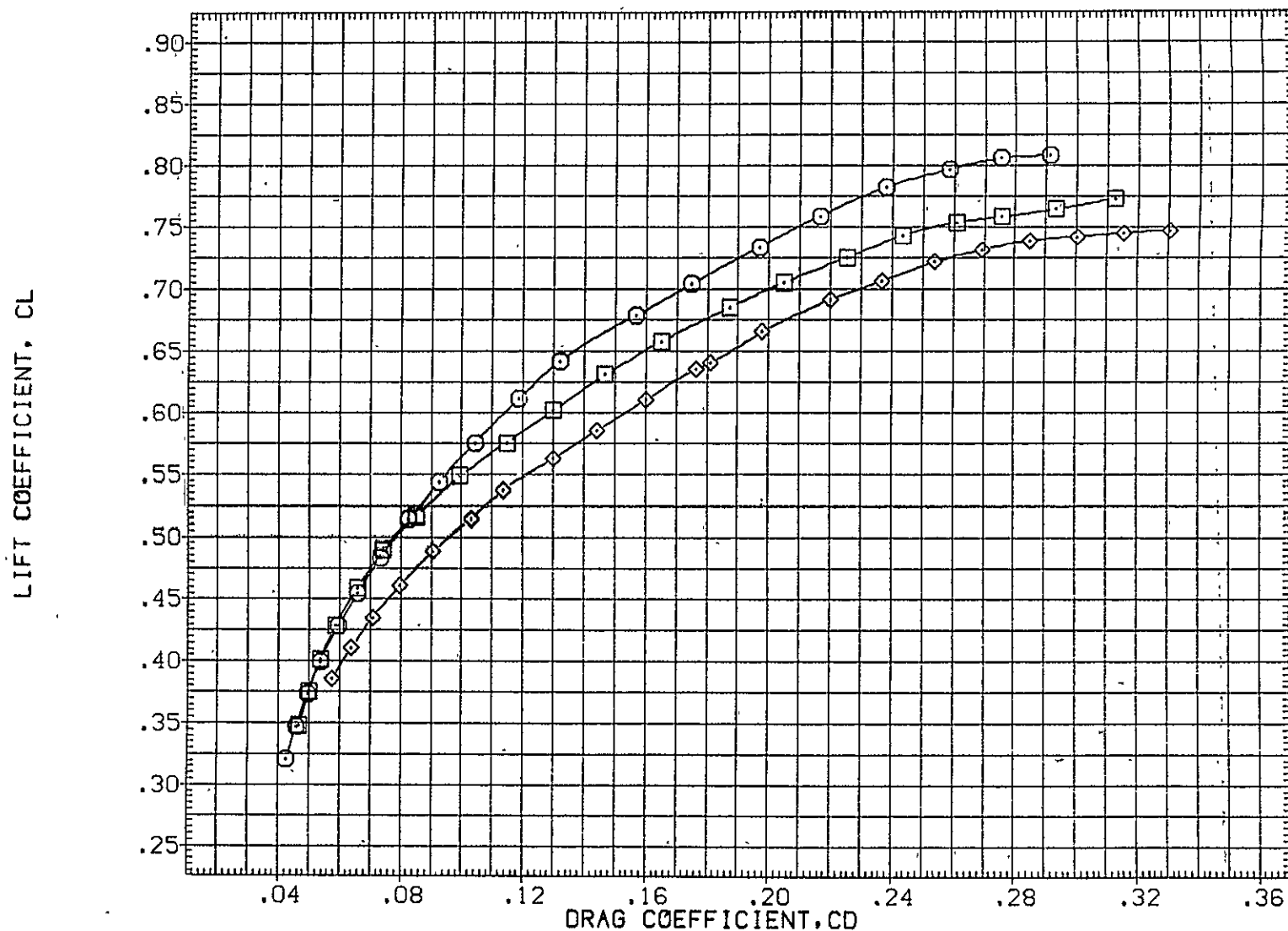


FIG. 19 747+ORB(10 DEG),+TIP FINS +SP45 FLAPS 20 LAUNCH, (S=-2)

ORB

CA5 0RB TC5 AT38.1 (PRES. K1 F20 H15.6 V9.1)(YGM068)

SYMBOL	MACH	PARAMETRIC VALUES			
○	.501	BETA	.000	STAB	-2.000
□	.600	RUD-U	.000	RUD-L	.000
◇	.700	ELV-1B	.000	ELV-0B	3.000
		S1-2	45.000	S3-4	45.000
		S5-6	45.000	IORB	9.700

REFERENCE INFORMATION		
SREF	2690.0000	SO.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN. X0
YMRP	.0000	IN. Y0
ZMRP	375.0000	IN. Z0
SCALE	.0300	

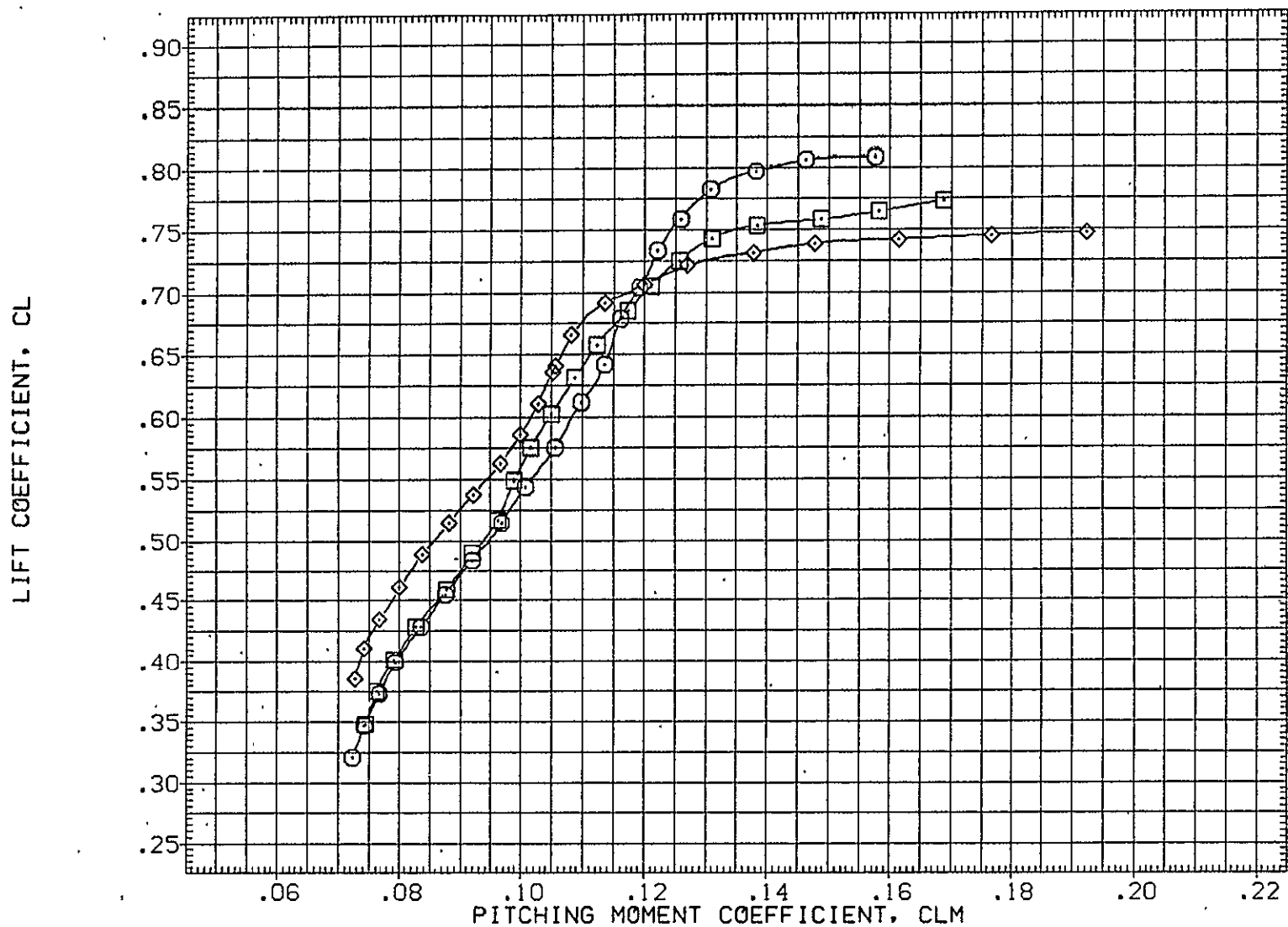


FIG. 19 747+0RB(10 DEG),+TIP FINS +SP45 FLAPS 20 LAUNCH, (S=-2)

0RB

SYMBOL	MACH	PARAMETRIC VALUES			
○	.501	BETA	.000	STAB	-2.000
□	.600	RUD-U	.000	RUD-L	.000
◇	.700	ELV-18	.000	ELV-08	3.000
		S1-2	45.000	S3-4	45.000
		S5-6	45.000	10RB	9.700

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN. X0
YMRP	.0000	IN. Y0
ZMRP	375.0000	IN. Z0
SCALE	.0300	

CARRIER FRL ANGLE OF ATTACK, ALPHA, DEG.

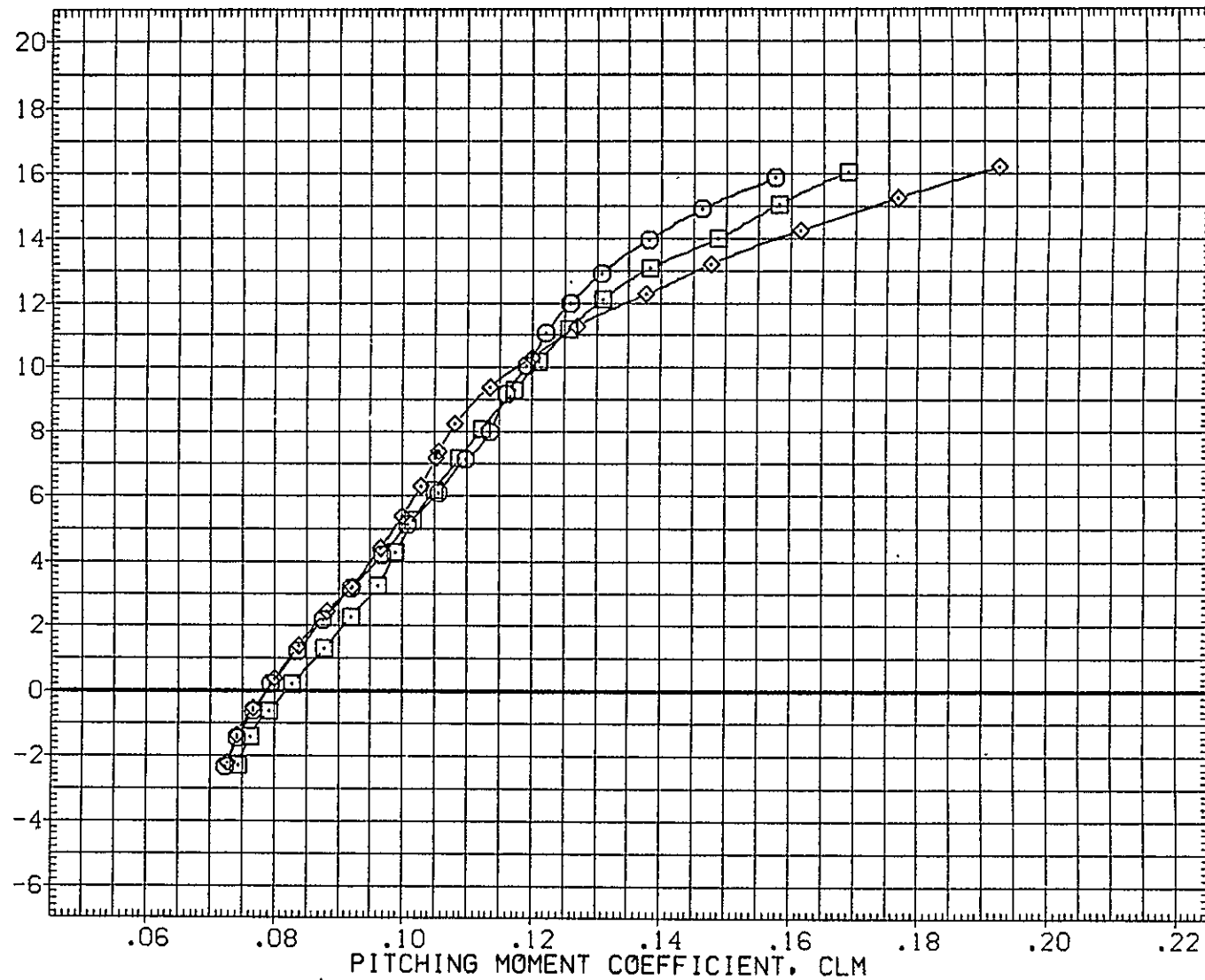


FIG. 19 747+0RB(10 DEG),+TIP FINS +SP45 FLAPS 20 LAUNCH, (S=-2)

0RB

CA5 K1 F20 H15.6 V9.1 (PLUS. 0RB TC5 AT38.1)(RGM070)

SYMBOL

○
□
◇

MACH

.500

.600

.700

BETA

RUD-U

-ELV-1B

S1-2

S5-6

PARAMETRIC VALUES

.000

.000

.000

.000

20.000

STAB

RUD-L

ELV-0B

S3-4

10RB

1.000

.000

3.000

45.000

9.700

REFERENCE INFORMATION

SREF 5500.0000 SQ.FT.

LREF 327.8000 IN.

BREF 2348.0000 IN.

XMRF 1339.9100 IN. XC

YMRF .0000 IN. YC

ZMRF 190.7500 IN. ZC

SCALE .0300

LIFT COEFFICIENT, CL

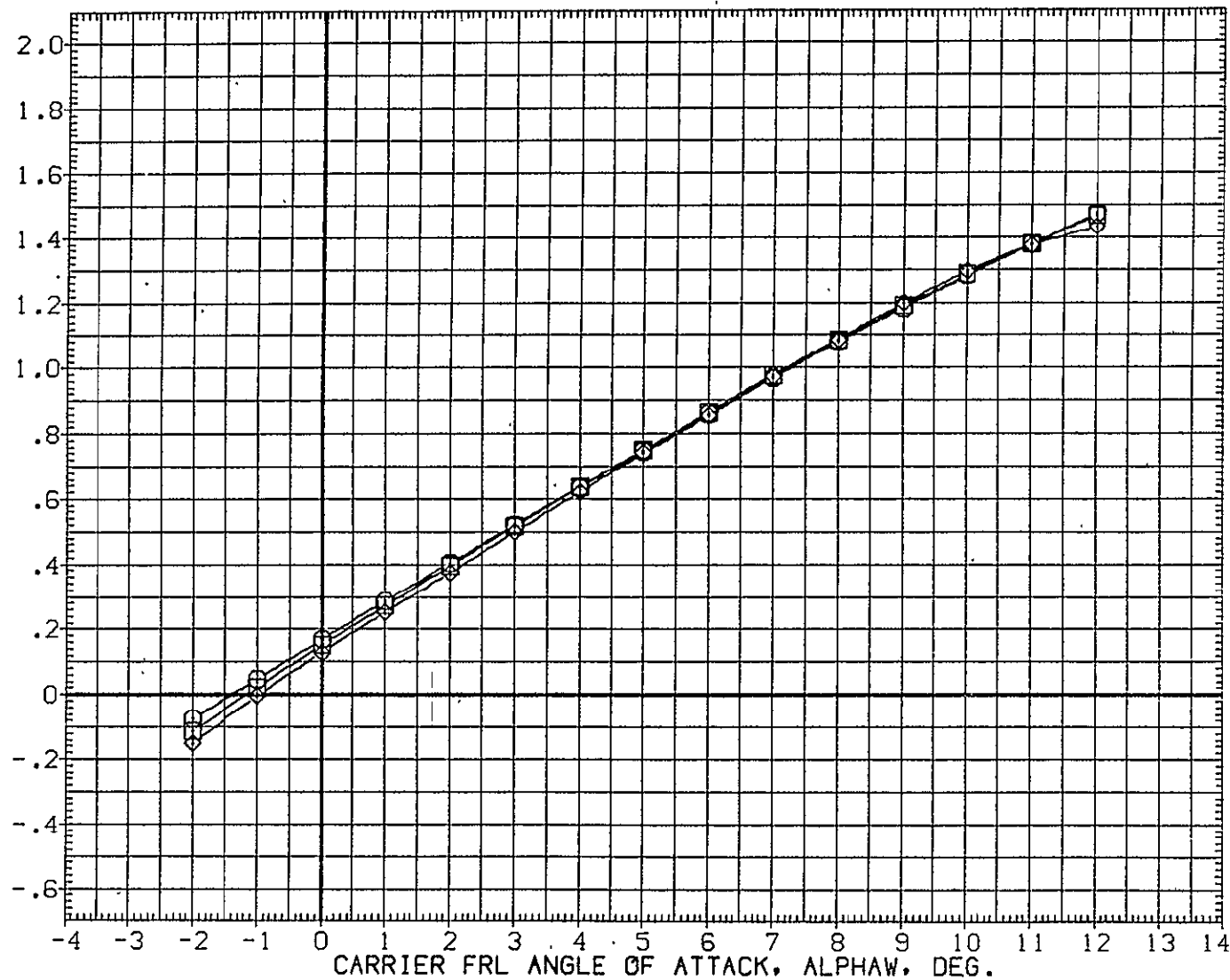


FIG. 20 747+0RB(10 DEG),+TIP FINS +STD SPD BRAKES,FLAPS 20 LAUNCH(S=+1)

TOTAL

SYMBOL	MACH	PARAMETRIC VALUES			
○	.500	BETA	.000	STAB	1.000
□	.600	RUD-U	.000	RUD-L	.000
◇	.700	ELV-IB	.000	ELV-OB	3.000
		S1-2	.000	S3-4	45.000
		SS-6	20.000	ICRB	9.700

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

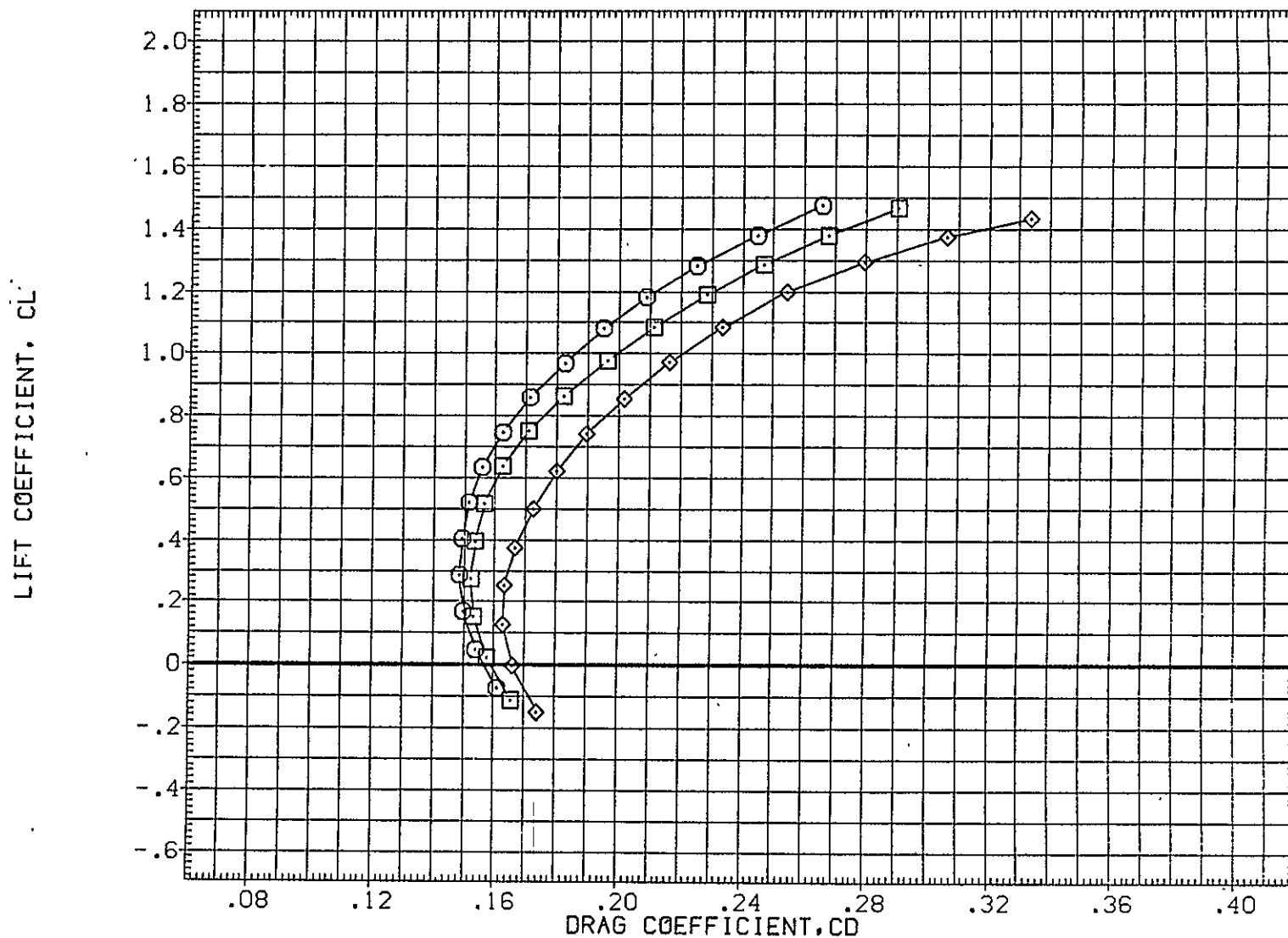


FIG. 20 747+0RB(10 DEG),+TIP FINS +STD SPD BRAKES,FLAPS 20 LAUNCH(S=+1)

TOTAL

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78

CA5 K1 F20 H15.6 V9.1 (PLUS. ORB TC5 AT38.1)(RGM070)

SYMBOL	MACH	PARAMETRIC VALUES				REFERENCE INFORMATION		
○	.500	BETA	.000	STAB	1.000	SREF	5500.0000	SQ.FT.
□	.600	RUD-U	.000	RUD-L	.000	LREF	327.8000	IN.
◇	.700	ELV-1B	.000	ELV-0B	3.000	BREF	2348.0000	IN.
		S1-2	.000	S3-4	45.000	XMRP	1339.9100	IN. XC
		S5-6	20.000	IORB	9.700	YMRP	.0000	IN. YC
						ZMRP	190.7500	IN. ZC
						SCALE	.0300	

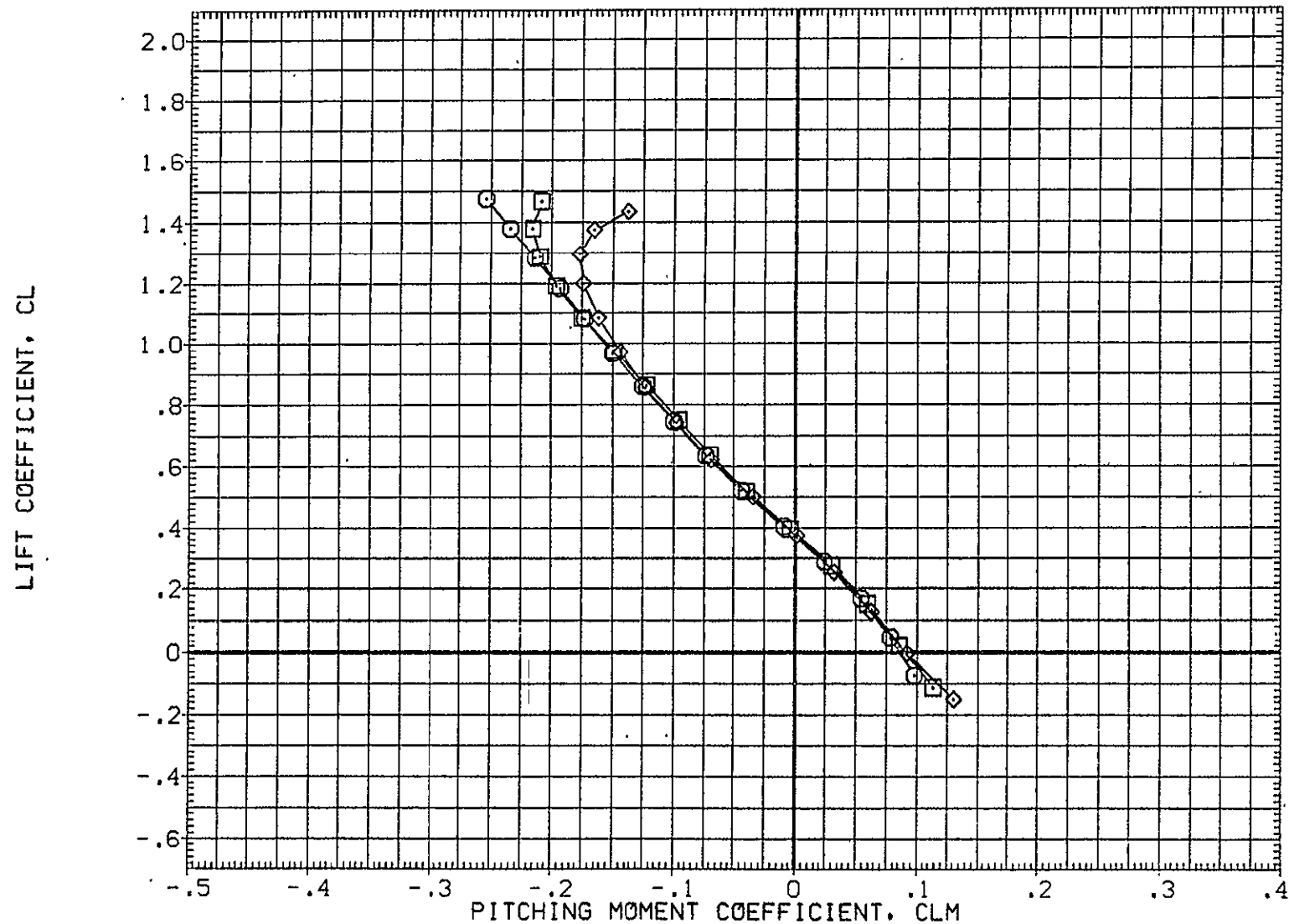


FIG. 20 747+ORB(10 DEG),+TIP FINS +STD SPD BRAKES,FLAPS 20 LAUNCH(S=+1) TOTAL

SYMBOL	MACH	PARAMETRIC VALUES			
○	.500	BETA	.000	STAB	1.000
□	.600	RUD-U	.000	RUD-L	.000
◇	.700	ELV-1B	.000	ELV-0B	3.000
		SI-2	.000	S3-4	45.000
		S5-6	20.000	10RB	9.700

REFERENCE INFORMATION		
SREF	5500.0000	50.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XM RP	1339.9100	IN. XC
YM RP	.0000	IN. YC
ZM RP	190.7500	IN. ZC
SCALE	.0300	

CARRIER FRL ANGLE OF ATTACK, ALPHA, DEG.

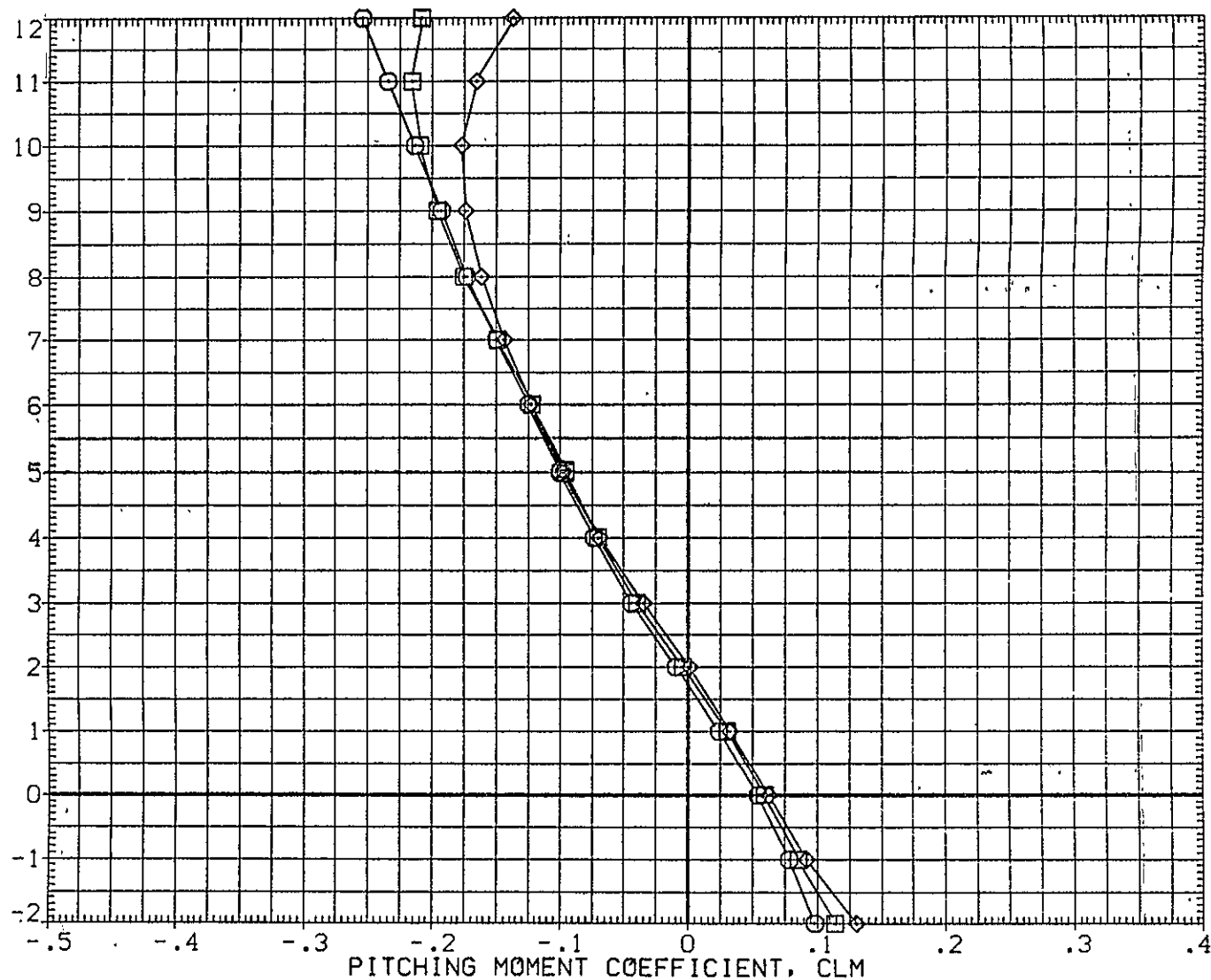


FIG. 20 747+0RB(10 DEG),+TIP FINS +STD SPD BRAKES,FLAPS 20 LAUNCH(S=+1) TOTAL

CA5 K1 F20 H15.6 V9.1 MINUS ORB TC5 AT38.1 (BGM070)

SYMBOL
○
□
◇

MACH

.500
.600
.700

BETA
RUD-U
ELV-1B
S1-2
S5-6

PARAMETRIC VALUES

.000 STAB 1.000
.000 RUD-L .000
.000 ELV-0B 3.000
.000 S3-4 45.000
20.000 IORB 9.700

REFERENCE INFORMATION

SREF 5500.0000 SQ.FT.
LREF 327.8000 IN.
BREF 2348.0000 IN.
XMRP 1339.9100 IN. XC
YMRP .0000 IN. YC
ZMRP 190.7500 IN. ZC
SCALE .0300

INCREMENTAL LIFT FORCE COEFFICIENT(STABILITY AXIS), DCL

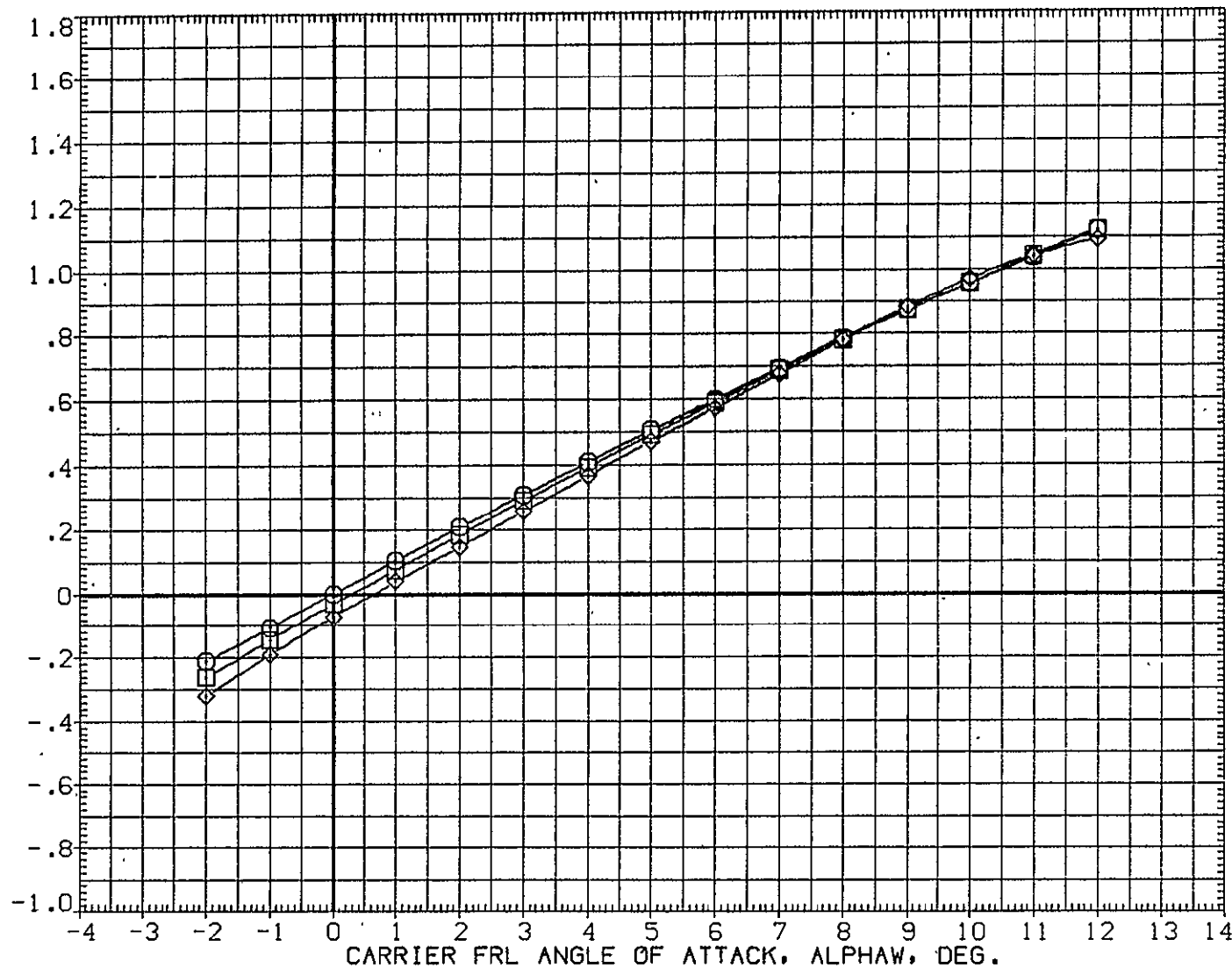


FIG. 21 747+ORB(10 DEG),+TIP FINS +STD SPD BRAKES,FLAPS 20 LAUNCH(S=+1)

747

SYMBOL	MACH	PARAMETRIC VALUES			
○	.500	BETA	.000	STAB	1.000
□	.600	RUD-U	.000	RUD-L	.000
◇	.700	ELV-1B	.000	ELV-0B	3.000
		S1-2	.000	S3-4	45.000
		S5-6	20.000	10RB	9.700

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

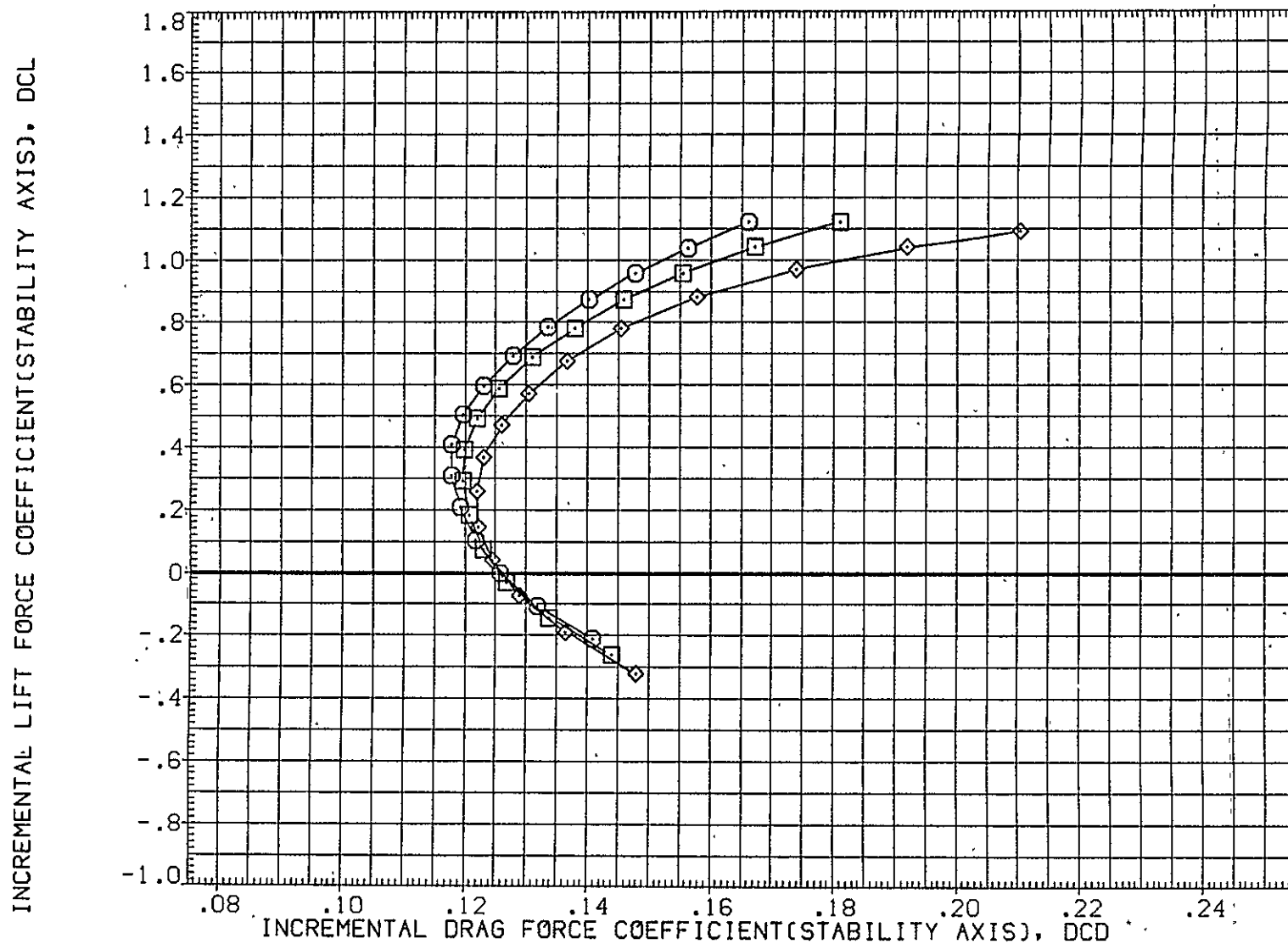


FIG. 21 747+0RB(10 DEG),+TIP FINS +STD SPD BRAKES,FLAPS 20 LAUNCH(S=+1)

747

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82

CA5 K1 F20 H15.6 V9.1 MINUS .0RB TC5 AT38.1 (BGM070)

SYMBOL
○
□
◇

MACH	BETA	PARAMETRIC VALUES	STAB	1.000
.500	.000	RUD-U	.000	.000
.600	.000	RUD-L	.000	.000
.700	.000	ELV-1B	.000	3.000
	.000	S1-2	S3-4	45.000
	.000	S5-6	10RB	9.700

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XM RP	1339.9100	IN. XC
YM RP	.0000	IN. YC
ZM RP	190.7500	IN. ZC
SCALE	.0300	

INCREMENTAL LIFT FORCE COEFFICIENT(STABILITY AXIS), DCL

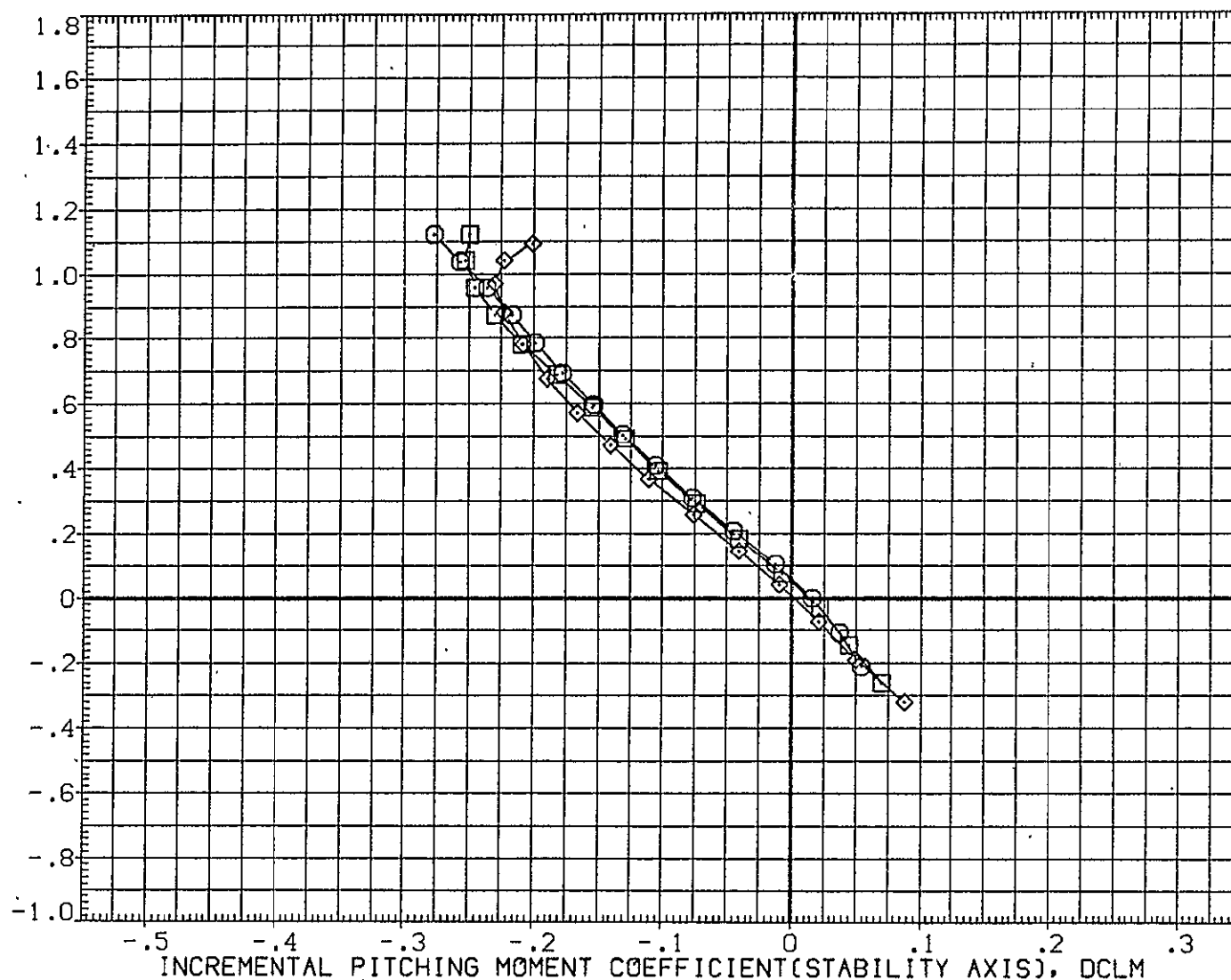


FIG. 21 747+0RB(10 DEG),+TIP FINS +STD SPD BRAKES,FLAPS 20 LAUNCH(S=+1)

747

SYMBOL

MACH

PARAMETRIC VALUES

REFERENCE INFORMATION

○
□
◇.500
.600
.700BETA
RUD-U
ELV-IB
S1-2
SS-6.000
.000
.000
.000
20.000STAB
RUD-L
ELV-OB
S3-4
IORB1.000
.000
3.000
45.000
9.700

SREF	5500.0000	SQ.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

CARRIER FRL ANGLE OF ATTACK, ALPHA, DEG.

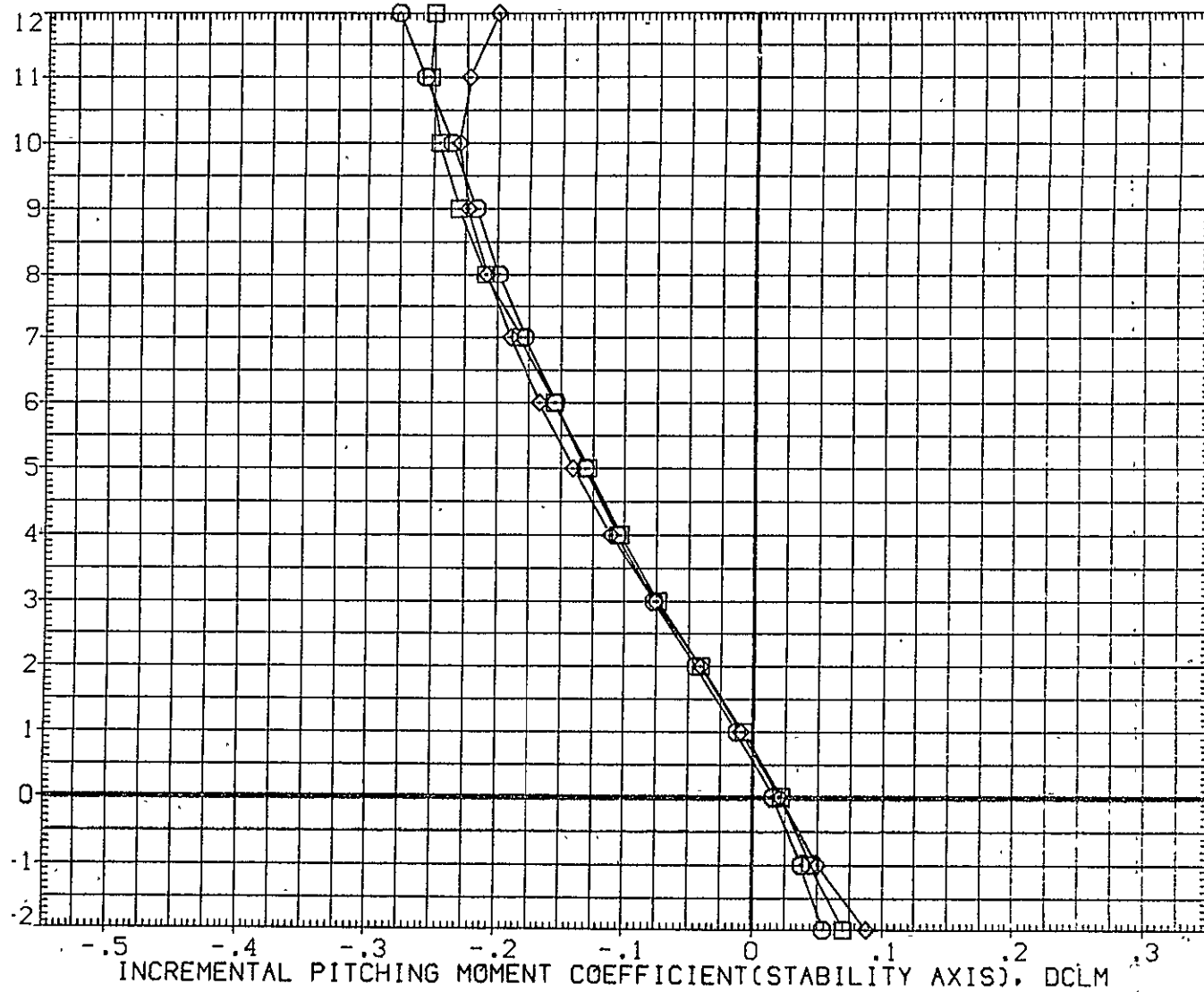


FIG. 21 747+0RB(10 DEG),+TIP FINS +STD SPD BRAKES,FLAPS 20 LAUNCH(S=+1) 747

CA5 0RB TC5 AT38.1 (PRES. K1 F20 H15.6 V9.1)(YGM070)

SYMBOL
○
□
◇

MACH

.499

BETA

PARAMETRIC VALUES

.000

STAB

1.000

.599

RUD-U

.000

RUD-L

.000

.701

ELV-IB

.000

ELV-OB

3.000

S1-2

.000

S3-4

45.000

S5-6

20.000

IORB

9.700

REFERENCE INFORMATION

SREF 2690.0000 SQ.FT.
LREF 474.8100 IN.
BREF 936.6800 IN.
XMRP 1109.0000 IN. X0
YMRP .0000 IN. Y0
ZMRP 375.0000 IN. Z0
SCALE .0300

LIFT COEFFICIENT, CL

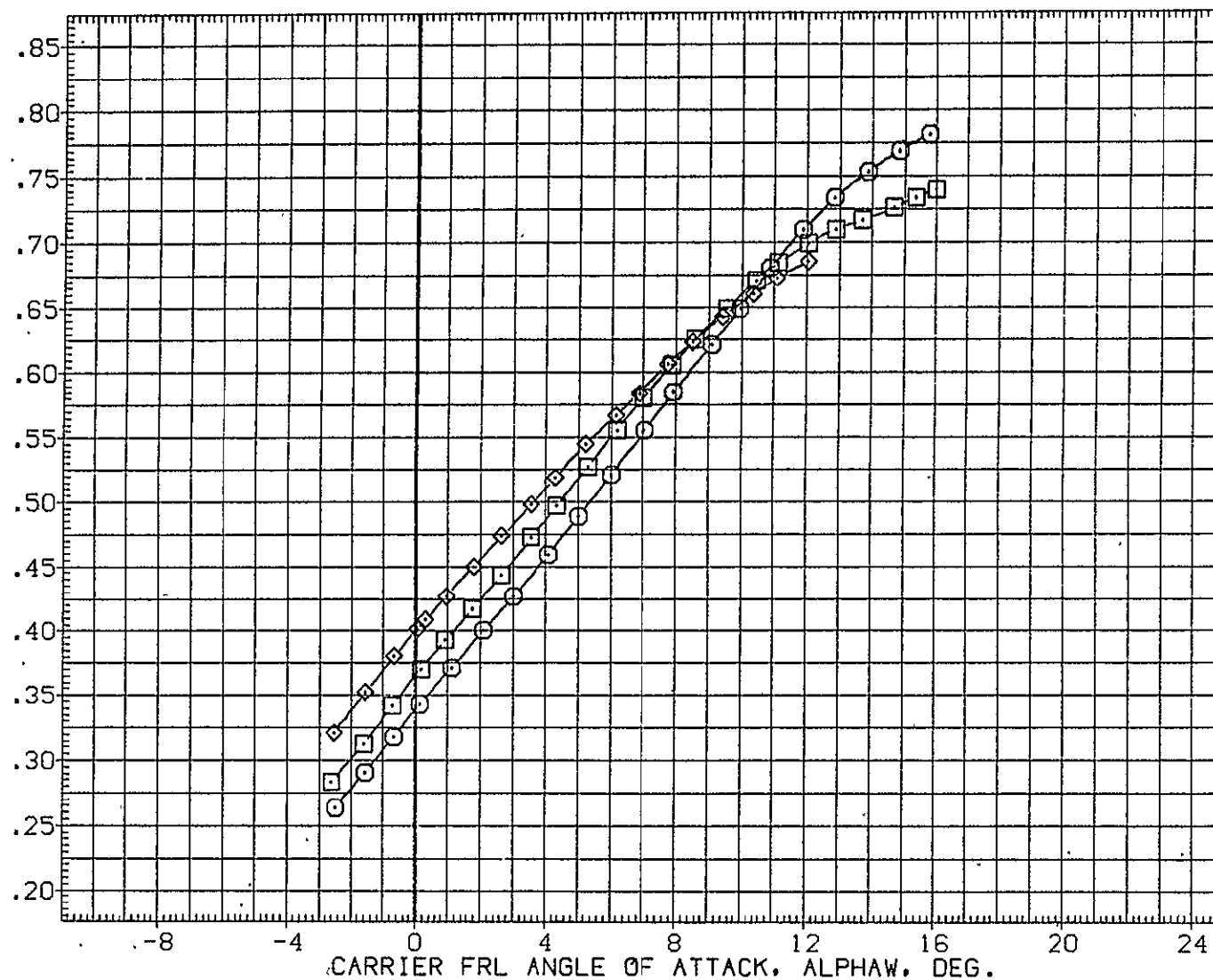


FIG. 22 747+0RB(10 DEG),+TIP FINS +STD SPD BRAKES,FLAPS 20 LAUNCH(S=+1)

0RB

SYMBOL

MACH

PARAMETRIC VALUES

REFERENCE INFORMATION

○
□
◇

.499

BETA

.000

STAB

1.000

SREF

2690.0000

SQ.FT.

.599

RUD-U

.000

RUD-L

.000

LREF

474.8100

IN.

.701

ELV-1B

.000

ELV-0B

3.000

BREF

936.6800

IN.

S1-2

.000

S3-4

45.000

XMRP

1109.0000

IN. X0

S5-6

20.000

10RB

9.700

YMRP

.0000

IN. Y0

ZMRP

375.0000

IN. Z0

SCALE

.0300

LIFT COEFFICIENT, CL

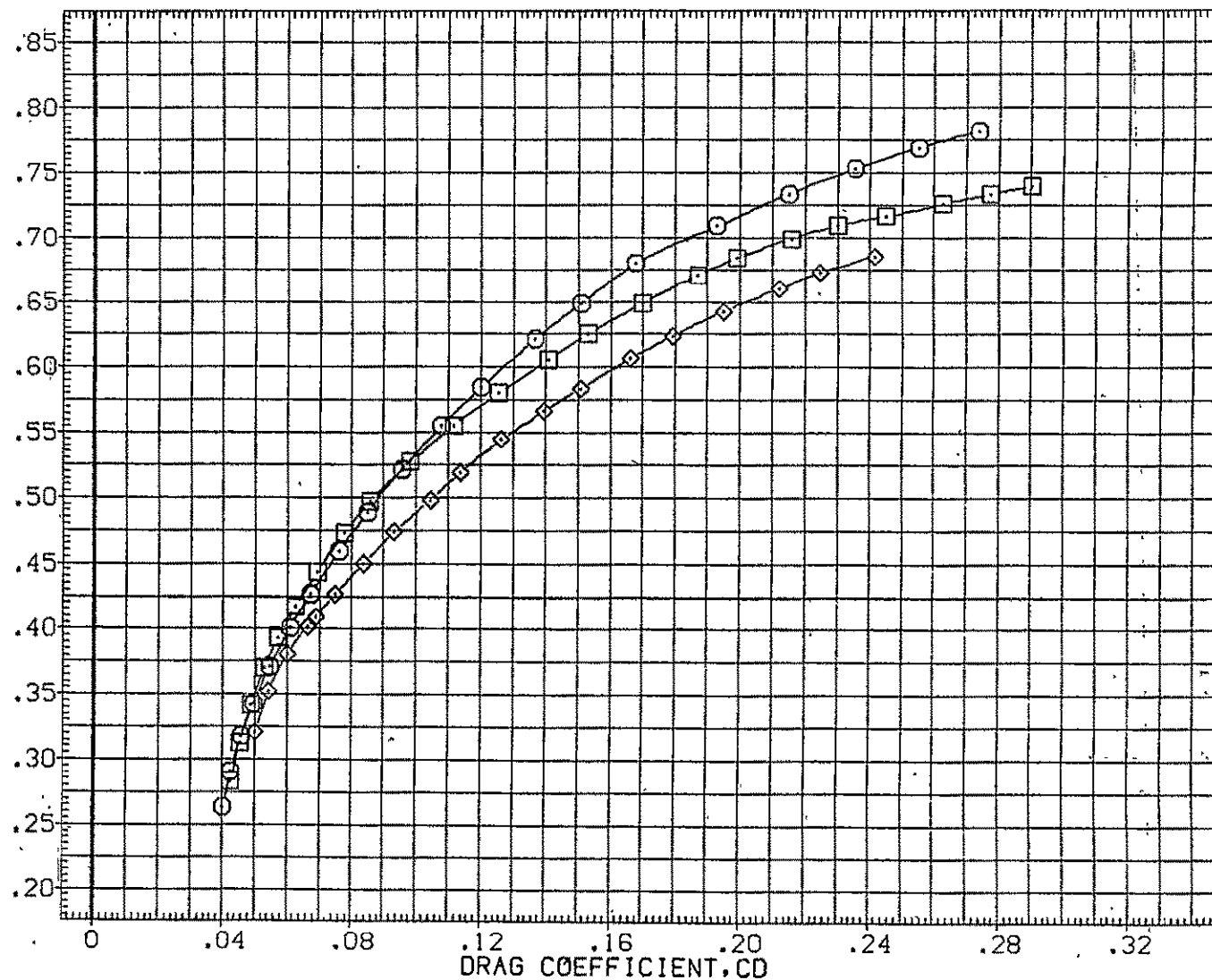


FIG. 22 747+ORB(10 DEG),+TIP FINS +STD SPD BRAKES,FLAPS 20 LAUNCH(S=+1)

ORB

PAGE

86

CA5 0RB TC5 AT38.1 (PRES. K1 F20 H15.6 V9.1)(YGM070)

SYMBOL

○
□
◇

MACH

.499
.599
.701

BETA
RUD-U
ELV-1B
S1-2
S5-6

PARAMETRIC VALUES

.000 STAB 1.000
.000 RUD-L .000
.000 ELV-0B 3.000
.000 S3-4 45.000
20.000 10RB 9.700

REFERENCE INFORMATION

SREF 2690.0000 SQ.FT.
LREF 474.8100 IN.
BREF 936.6800 IN.
XMRP 1109.0000 IN. X0
YMRP .0000 IN. Y0
ZMRP 375.0000 IN. Z0
SCALE .0300

LIFT COEFFICIENT, CL

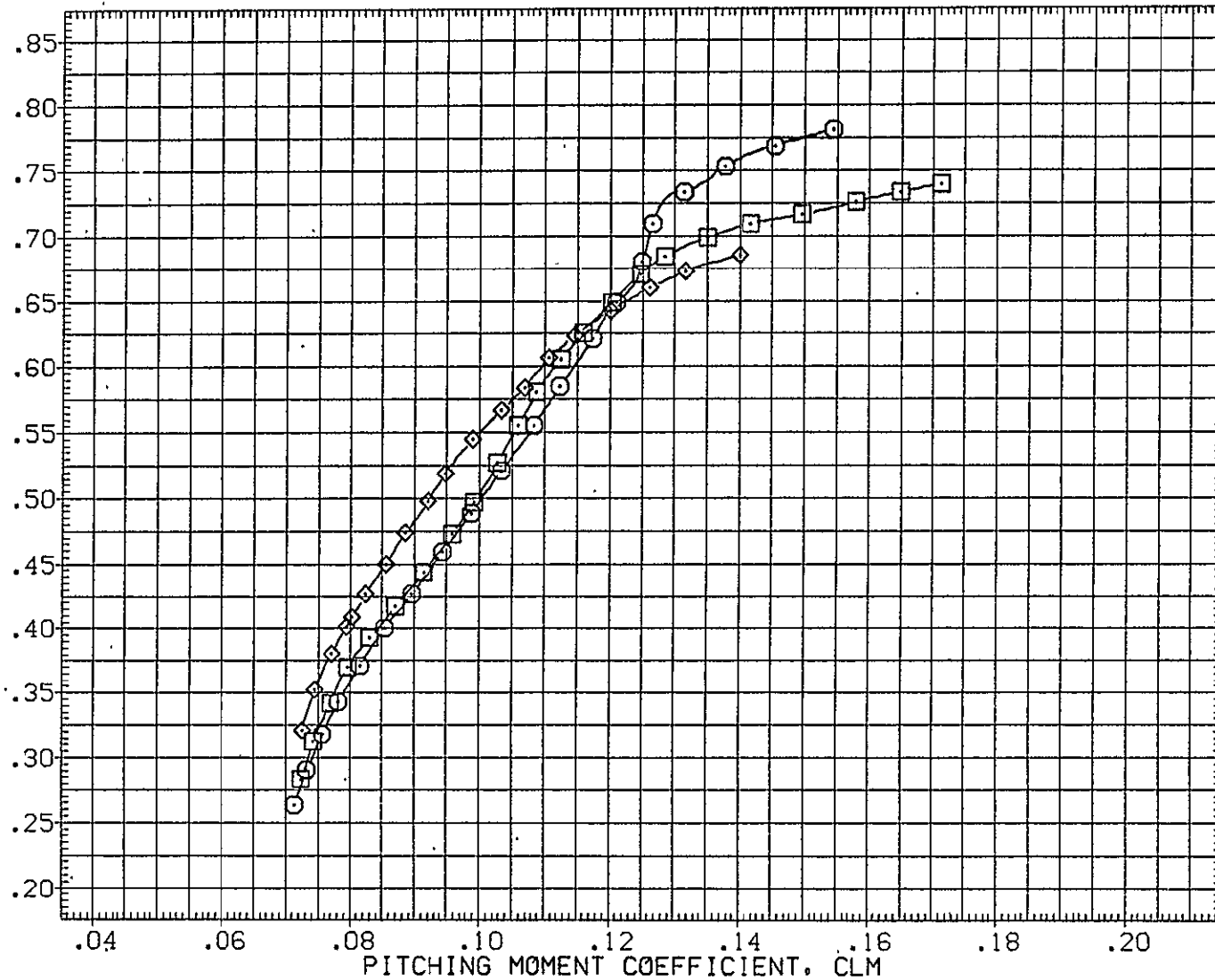


FIG. 22 747+0RB(10 DEG),+TIP FINS +STD SPD BRAKES,FLAPS 20 LAUNCH(S=+1)

0RB

SYMBOL	MACH	PARAMETRIC VALUES			
○	.499	BETA	.000	STAB	1.000
□	.599	RUD-U	.000	RUD-L	.000
◇	.701	ELV-1B	.000	ELV-0B	3.000
		S1-2	.000	S3-4	45.000
		S5-6	20.000	10RB	9.700

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN. X0
YMRP	.0000	IN. Y0
ZMRP	375.0000	IN. Z0
SCALE	.0300	

CARRIER FRL ANGLE OF ATTACK, ALPHAW, DEG.

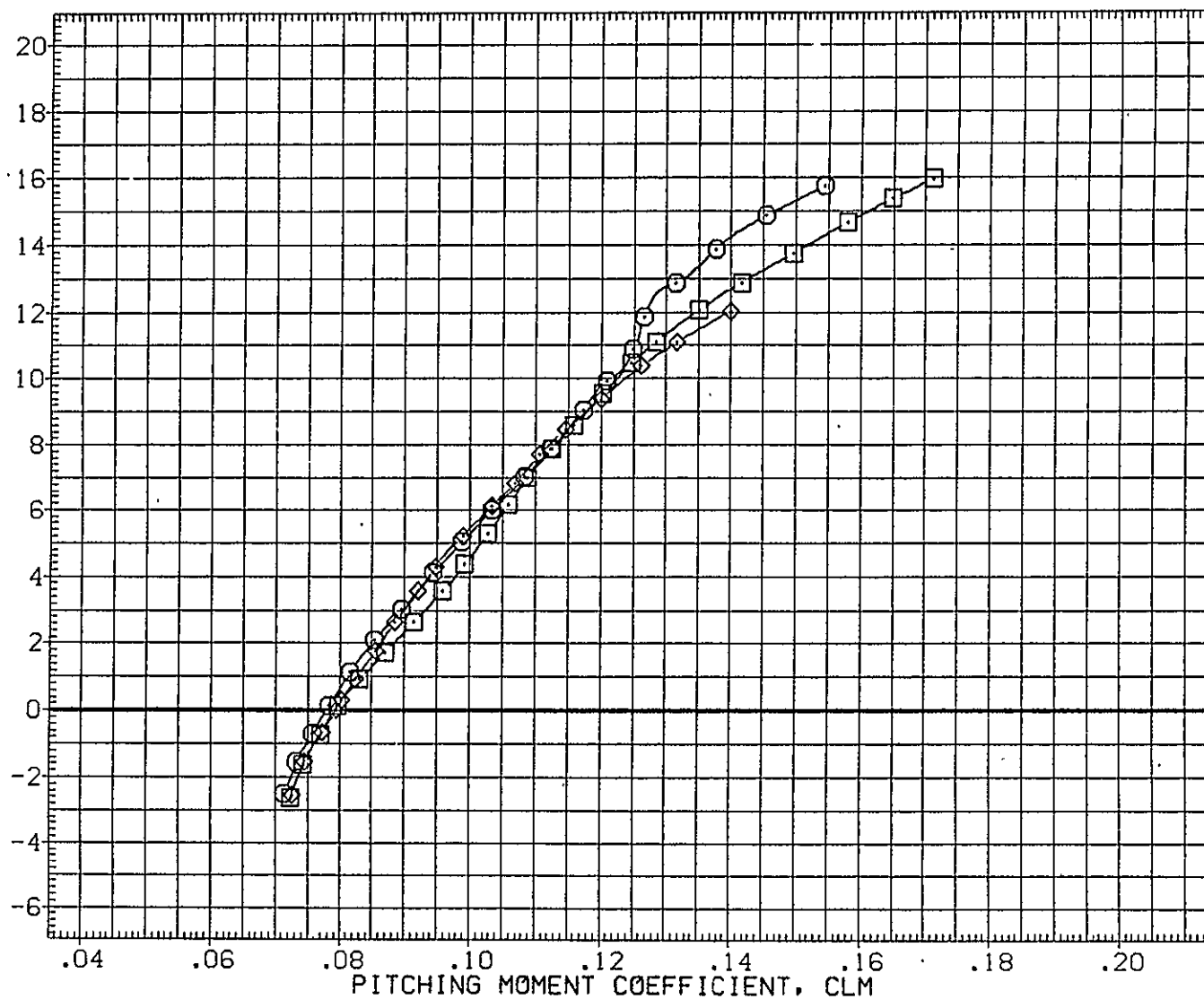


FIG. 22 747+ORB(10 DEG),+TIP FINS +STD SPD BRAKES,FLAPS 20 LAUNCH(S=+1)

ORB

CA5 K1 F20 H15.6 V9.1 (PLUS. ORB TC5 AT38.1)(RGM071)

SYMBOL
○
□
◇

MACH

.500
.600
.700
BETA
RUD-U
ELV-1B
S1-2
S5-6

PARAMETRIC VALUES

.000 STAB 1.000
.000 RUD-L .000
.000 ELV-0B 3.000
.000 S3-4 .000
.000 10RB 9.700

REFERENCE INFORMATION

SREF 5500.0000 SQ.FT.
LREF 327.8000 IN.
BREF 2348.0000 IN.
XMRP 1339.9100 IN. XC
YMRP .0000 IN. YC
ZMRP 190.7500 IN. ZC
SCALE .0300

LIFT COEFFICIENT, CL

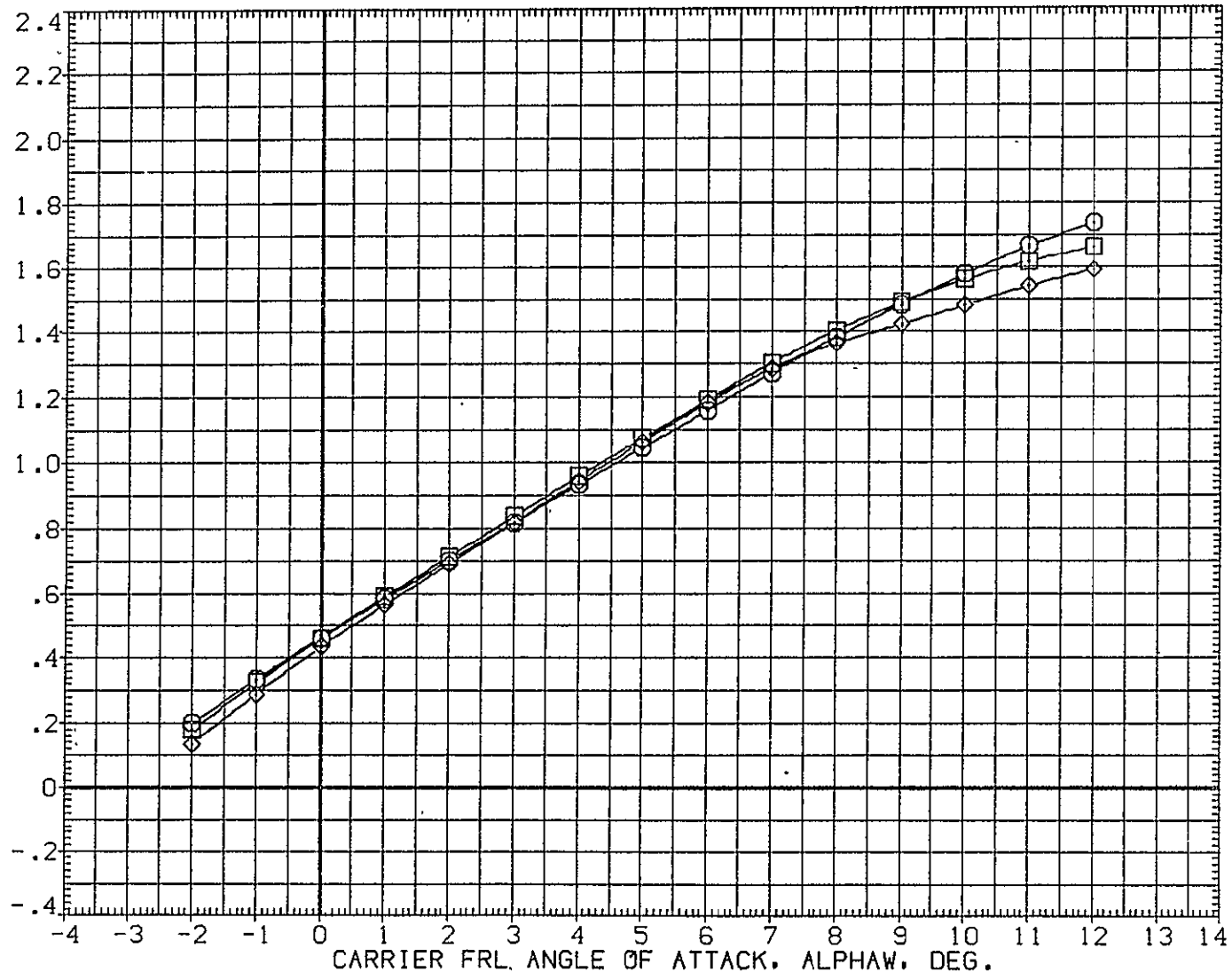


FIG. 23 747+ORB(10 DEG)+TIP FINS,NO SPOILERS,FLAPS 20 LAUNCH(S=+1)

TOTAL

SYMBOL	MACH	PARAMETRIC VALUES			
○	.500	BETA	.000	STAB	1.000
□	.600	RUD-U	.000	RUD-L	.000
◇	.700	ELV-1B	.000	ELV-0B	3.000
		S1-2	.000	S3-4	.000
		S5-6	.000	10RB	9.700

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

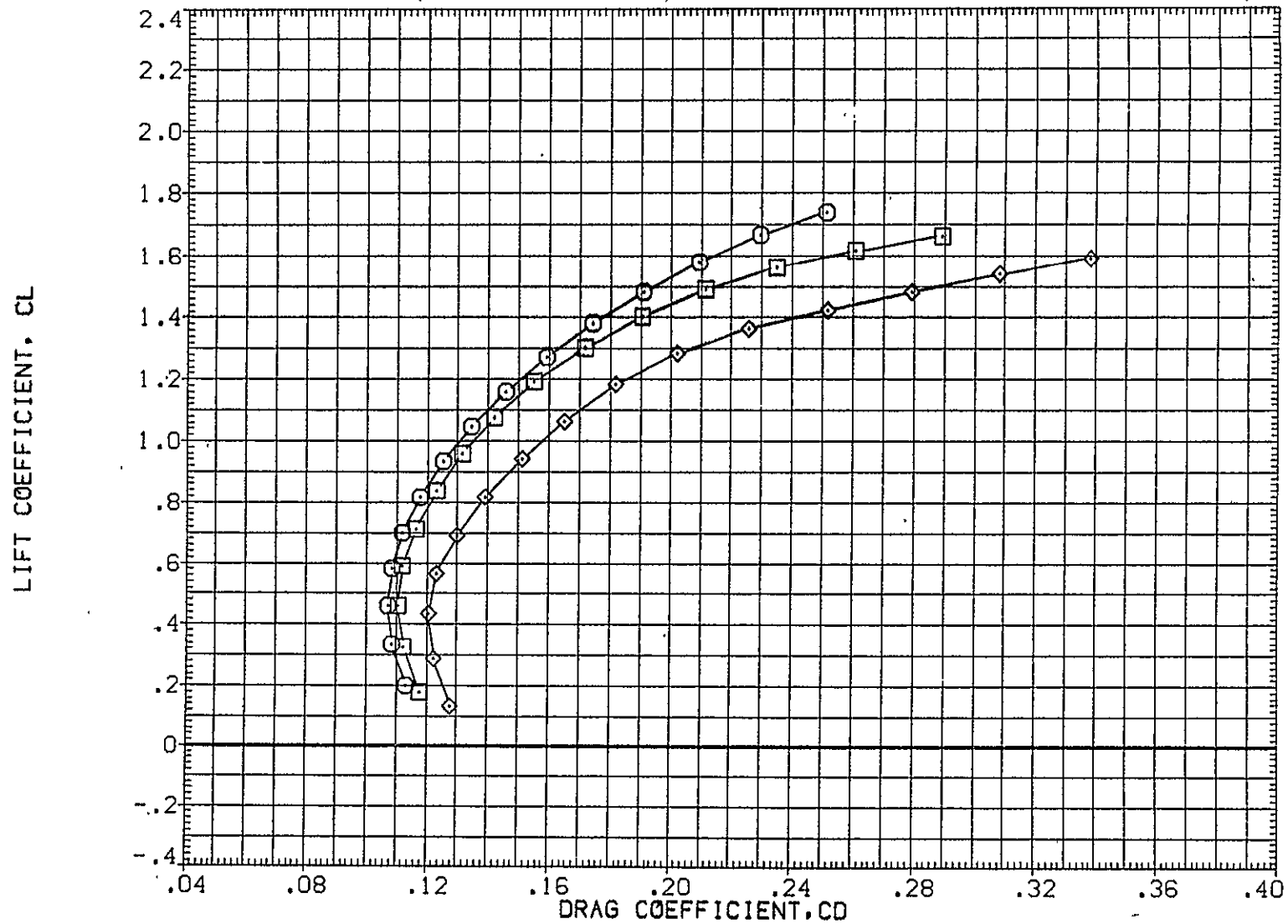


FIG. 23 747+0RB(10 DEG)+TIP FINS, NO SPOILERS, FLAPS 20 LAUNCH(S=+1)

TOTAL

PAGE

90

CA5 K1 F20 H15.6 V9.1 (PLUS. 0RB TC5 AT38.1)(RGM071)

SYMBOL	MACH	PARAMETRIC VALUES				REFERENCE INFORMATION		
○	.500	BETA	.000	STAB	1.000	SREF	5500.0000	50.FT.
□	.600	RUD-U	.000	RUD-L	.000	LREF	327.8000	IN.
◇	.700	ELV-1B	.000	ELV-0B	3.000	BREF	2348.0000	IN.
		S1-2	.000	S3-4	.000	XMRP	1339.9100	IN. XC
		SS-6	.000	10RB	9.700	YMRP	.0000	IN. YC
						ZMRP	190.7500	IN. ZC
						SCALE	.0300	

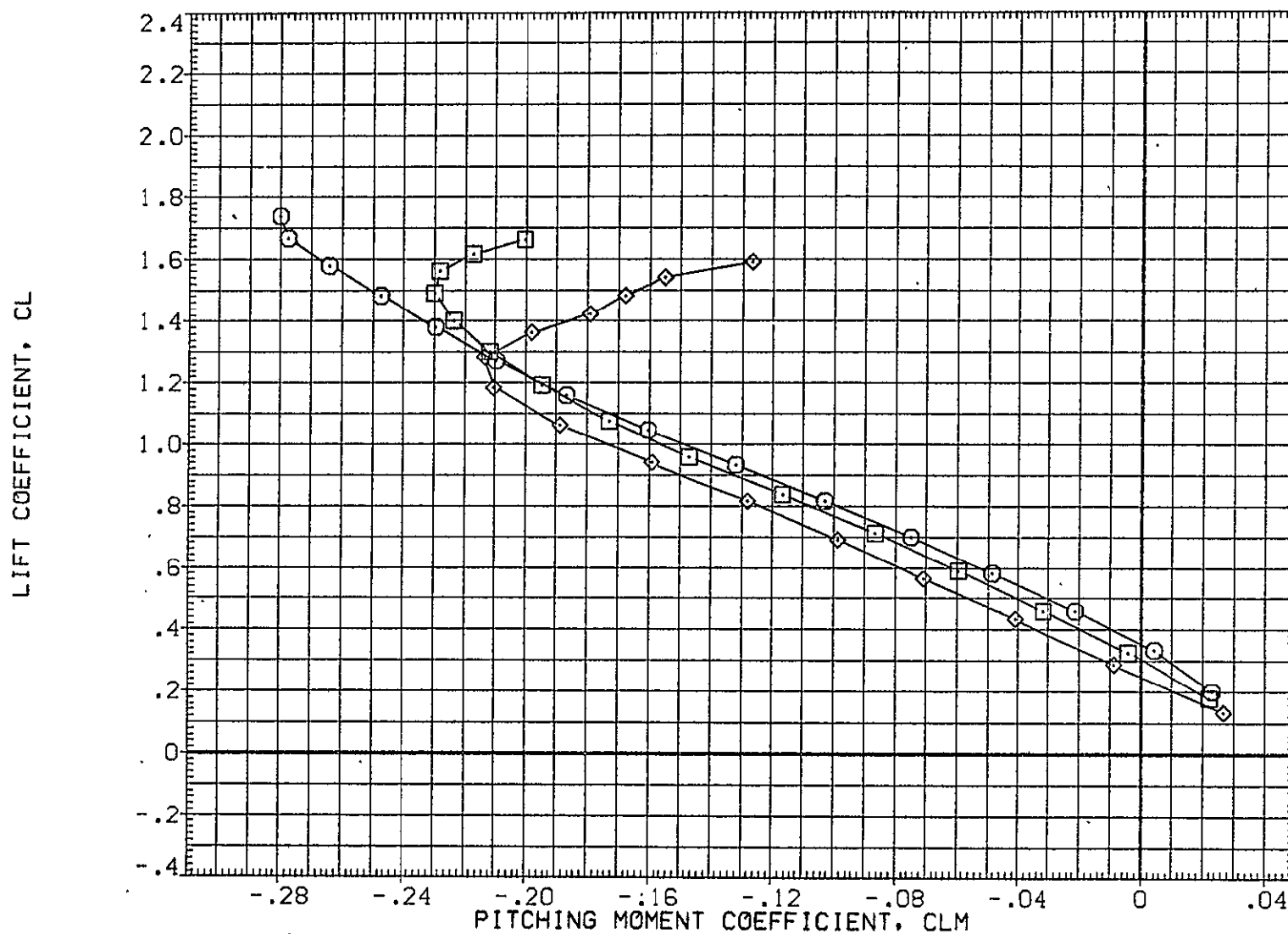


FIG. 23 747+0RB(10 DEG)+TIP FINS,NO SPOILERS,FLAPS 20 LAUNCH(S=+1)

TOTAL

SYMBOL	MACH	PARAMETRIC VALUES			
○	.500	BETA	.000	STAB	1.000
□	.600	RUD-U	.000	RUD-L	.000
◇	.700	ELV-1B	.000	ELV-0B	3.000
		S1-2	.000	S3-4	.000
		S5-6	.000	10RB	9.700

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

CARRIER FRL ANGLE OF ATTACK, ALPHAW. DEG.

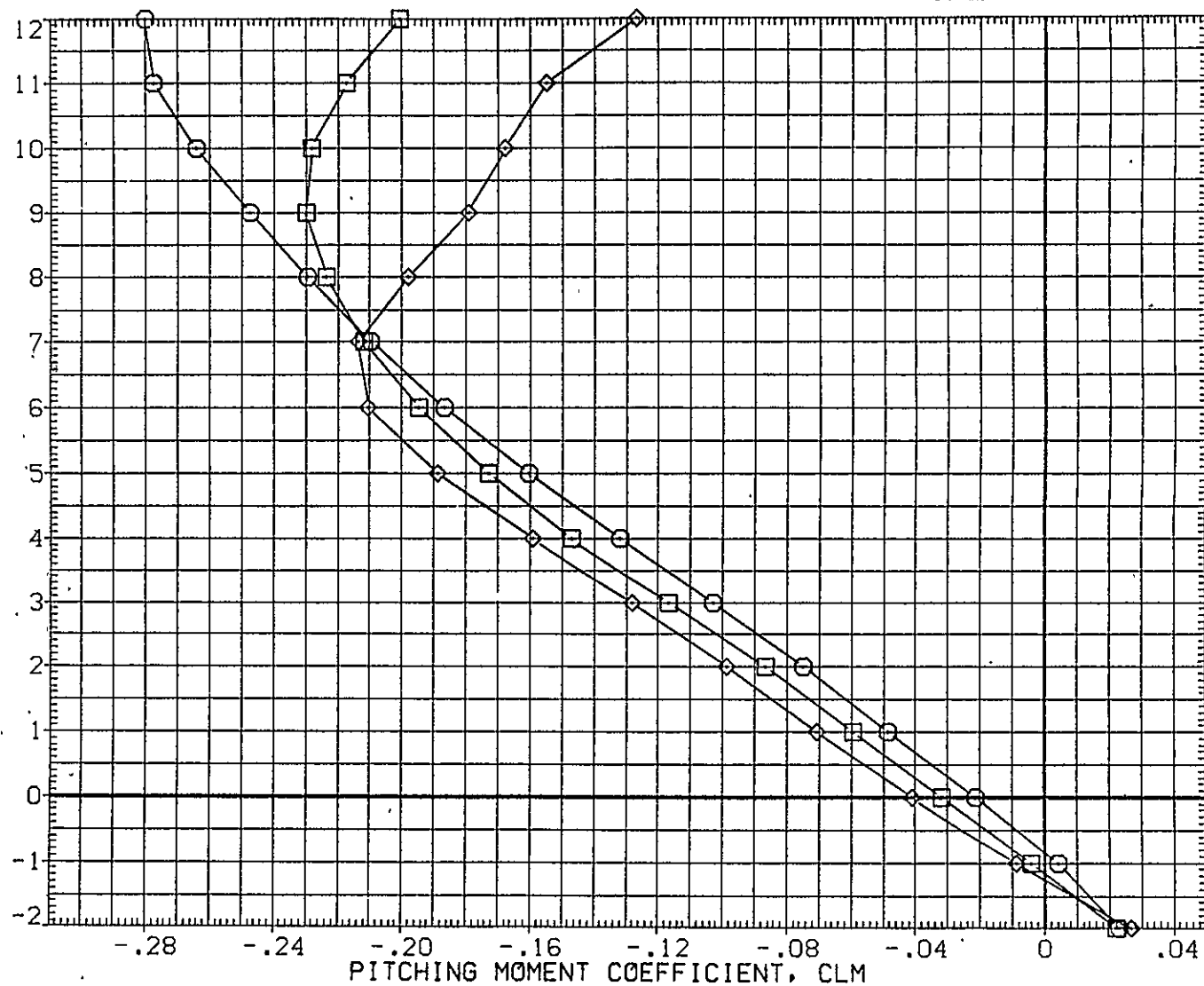


FIG. 23 747+0RB(10 DEG)+TIP FINS,NO SPOILERS,FLAPS 20 LAUNCH(S=+1)

TOTAL

PAGE

92

CA5 K1 F20 H15.6 V9.1 MINUS ORB TC5 AT38.1 (BGM071)

SYMBOL	MACH	PARAMETRIC VALUES				REFERENCE INFORMATION		
○	.500	BETA	.000	STAB	1.000	SREF	5500.0000	SQ.FT.
□	.600	RUD-U	.000	RUD-L	.000	LREF	327.8000	IN.
◇	.700	ELV-1B	.000	ELV-OB	3.000	BREF	2348.0000	IN.
		S1-2	.000	S3-4	.000	XMRP	1339.9100	IN. XC
		S5-6	.000	IORB	9.700	YMRP	.0000	IN. YC
						ZMRP	190.7500	IN. ZC
						SCALE	.0300	

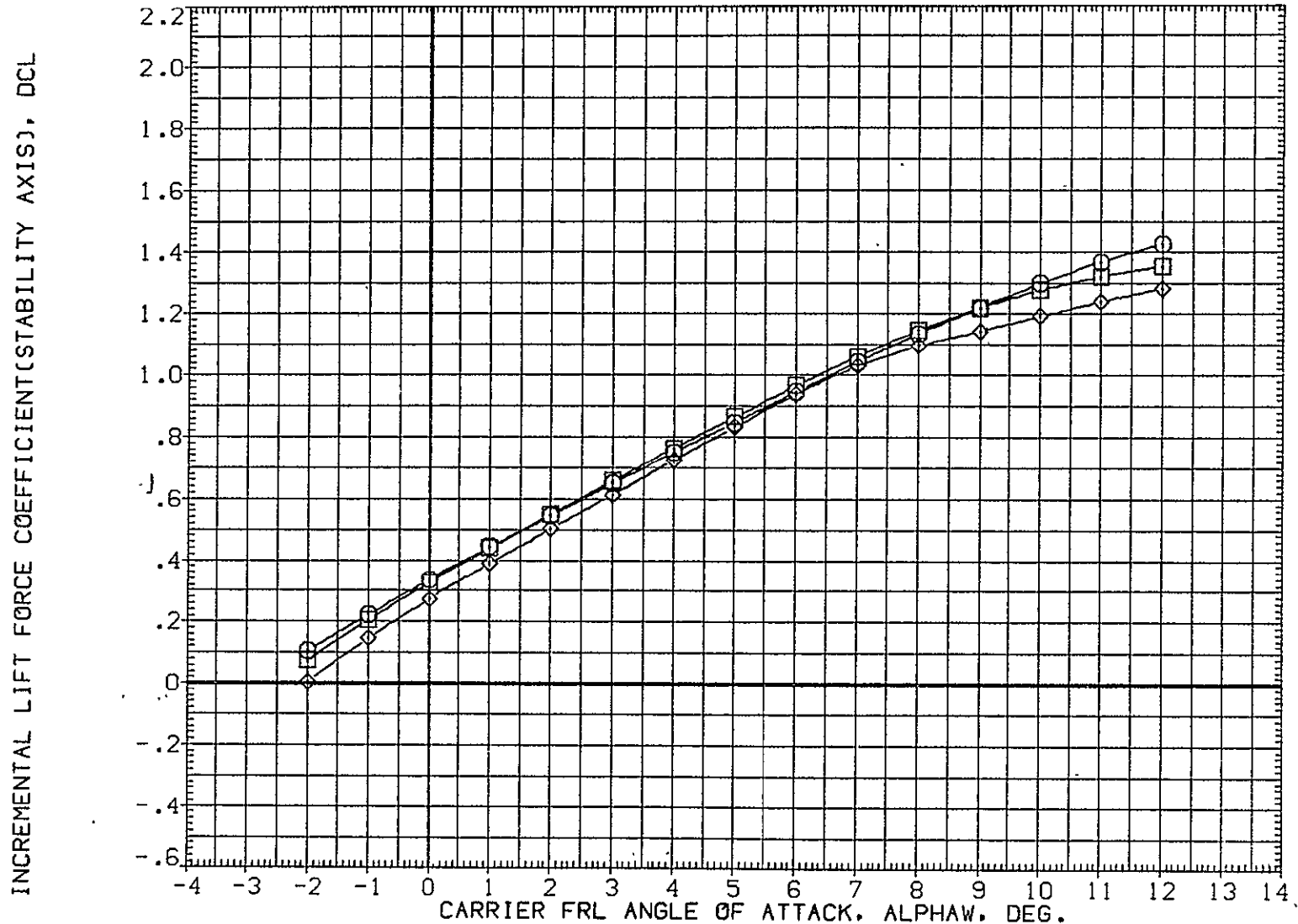


FIG. 24 747+ORB(10 DEG)+TIP FINS, NO SPOILERS, FLAPS 20 LAUNCH(S=+1)

747

SYMBOL	MACH	PARAMETRIC VALUES			
◇	.500	BETA	.000	STAB	1.000
□	.600	RUD-U	.000	RUD-L	.000
◇	.700	ELV-1B	.000	ELV-0B	3.000
		S1-2	.000	S3-4	.000
		S5-6	.000	IORB	9.700

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

INCREMENTAL LIFT FORCE COEFFICIENT(STABILITY AXIS), DCL

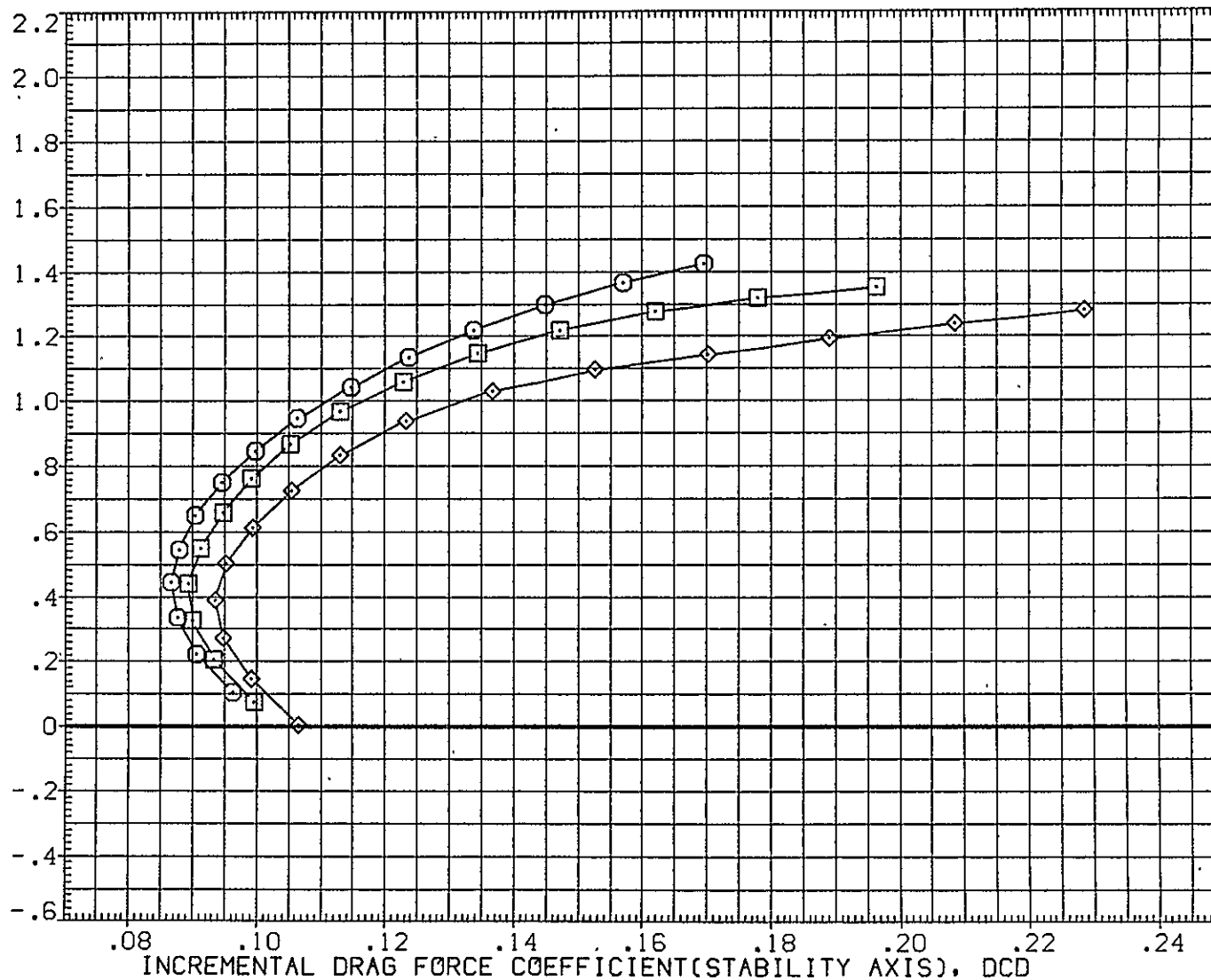


FIG. 24 747+ORB(10 DEG)+TIP FINS, NO SPOILERS, FLAPS 20 LAUNCH(S=+1)

747

CA5 K1 F20 H15.6 V9.1 MINUS ORB TC5 AT38.1 (BGM071)

SYMBOL	MACH	PARAMETRIC VALUES				REFERENCE INFORMATION		
○	.500	BETA	.000	STAB	1.000	SREF	5500.0000	50.FT.
□	.600	RUD-U	.000	RUD-L	.000	LREF	327.8000	IN.
◇	.700	ELV-1B	.000	ELV-OB	3.000	BREF	2348.0000	IN.
		S1-2	.000	S3-4	.000	XMRP	1339.9100	IN. XC
		S5-6	.000	IORB	9.700	YMRP	.0000	IN. YC
						ZMRP	190.7500	IN. ZC
						SCALE	.0300	

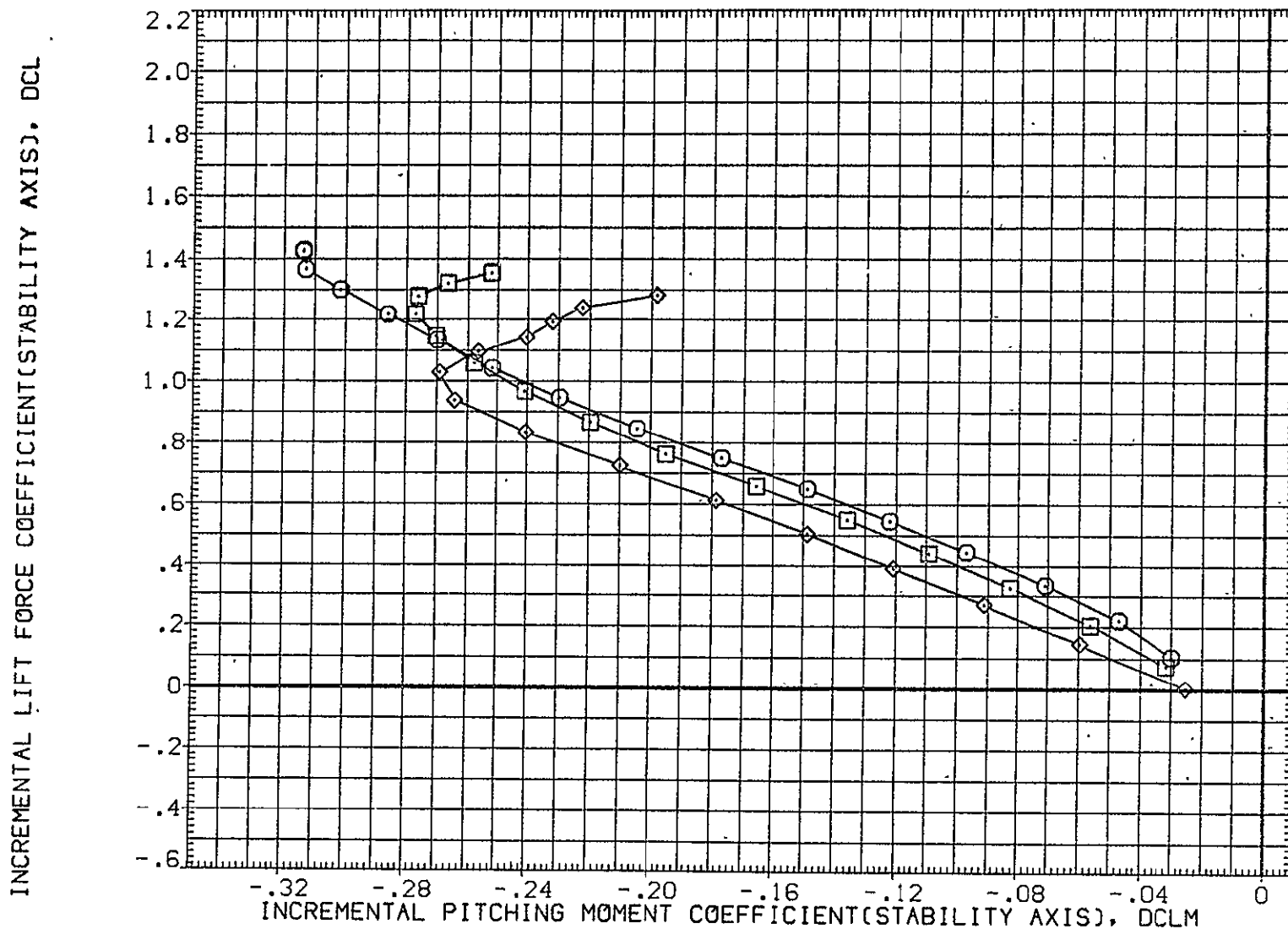


FIG. 24 747+ORB(10 DEG)+TIP FINS, NO SPOILERS, FLAPS 20 LAUNCH(S=+1)

747

SYMBOL	MACH	PARAMETRIC VALUES				REFERENCE INFORMATION		
○	.500	BETA	.000	STAB	1.000	SREF	5500.0000	SQ.FT.
□	.600	RUD-U	.000	RUD-L	.000	LREF	327.8000	IN.
◇	.700	ELV-IB	.000	ELV-OB	3.000	BREF	2348.0000	IN.
		S1-2	.000	S3-4	.000	XMRP	1339.9100	IN. XC
		S5-6	.000	ICRB	9.700	YMRP	.0000	IN. YC
						ZMRP	190.7500	IN. ZC
						SCALE	.0300	

CARRIER FRL ANGLE OF ATTACK, ALPHA, DEG.

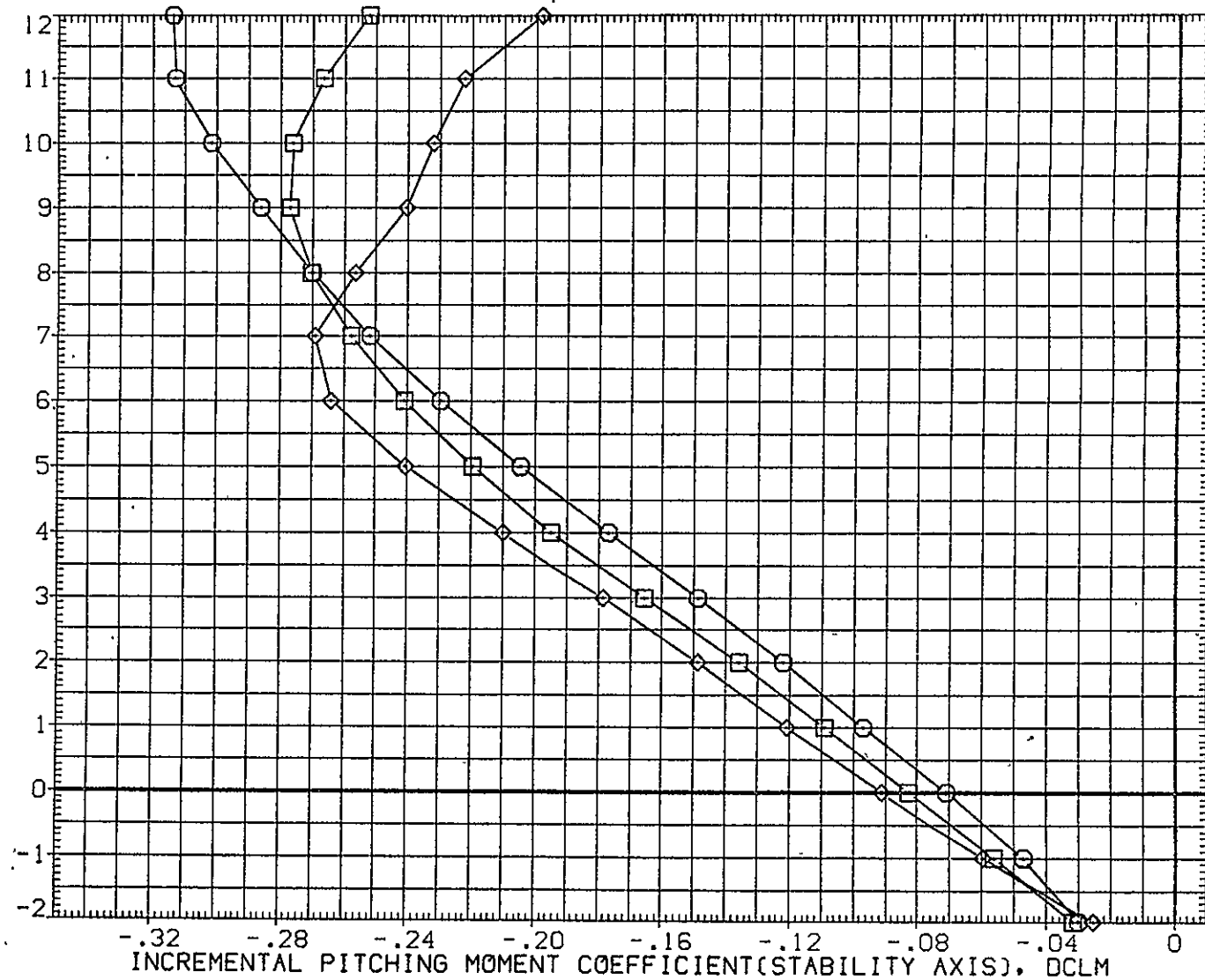


FIG. 24 747+ORB(10 DEG)+TIP FINS, NO SPOILERS, FLAPS 20 LAUNCH(S=+1)

747

CA5 ORB TC5 AT38.1 (PRES. K1 F20 H15.6 V9.1)(YGM071)

SYMBOL	MACH	PARAMETRIC VALUES				REFERENCE INFORMATION		
○	.499	BETA	.000	STAB	1.000	SREF	2690.0000	SQ.FT.
□	.600	RUD-U	.000	RUD-L	.000	LREF	474.8100	IN.
◇	.700	ELV-1B	.000	ELV-OB	3.000	BREF	936.6800	IN.
		S1-2	.000	S3-4	.000	XMRP	1109.0000	IN. X0
		S5-6	.000	10RB	9.700	YMRP	.0000	IN. Y0
						ZMRP	375.0000	IN. Z0
						SCALE	.0300	

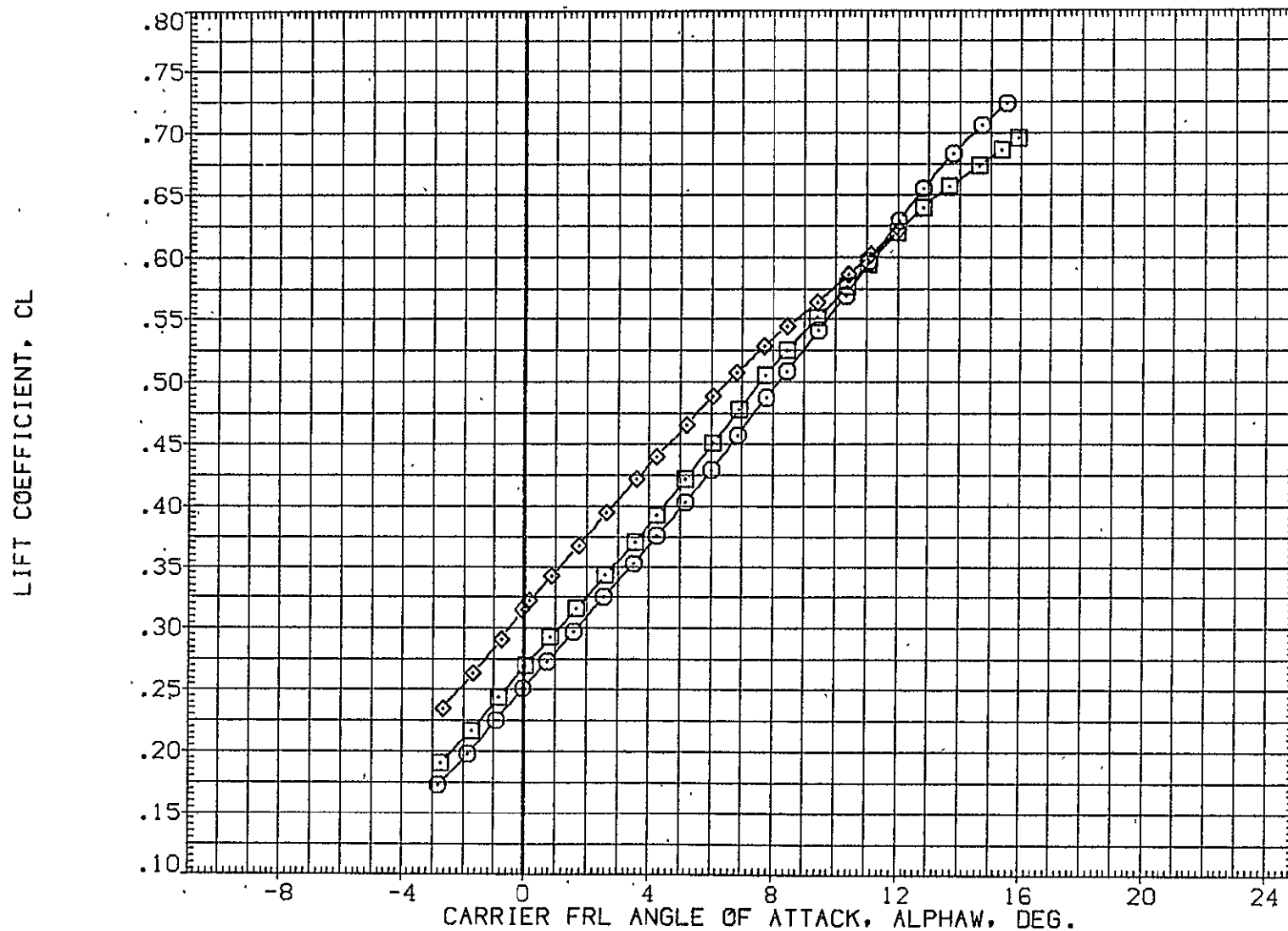


FIG. 25 747+ORB(10 DEG)+TIP FINS,N0 SPOILERS,FLAPS 20 LAUNCH(S=+1)

ORB

SYMBOL
 ○
 □
 ◇

MACH

BETA
 .499
 .600
 .700
 ELV-18
 S1-2
 S5-6

PARAMETRIC VALUES

.000 STAB 1.000
 .000 RUD-U .000 RUD-L
 .000 ELV-OB 3.000
 .000 S3-4 .000
 .000 10RB 9.700

REFERENCE INFORMATION

SREF 2690.0000 SQ.FT.
 LREF 474.8100 IN.
 BREF 936.6800 IN.
 XMRP 1109.0000 IN. X0
 YMRP .0000 IN. Y0
 ZMRP 375.0000 IN. Z0
 SCALE .0300

LIFT COEFFICIENT, CL

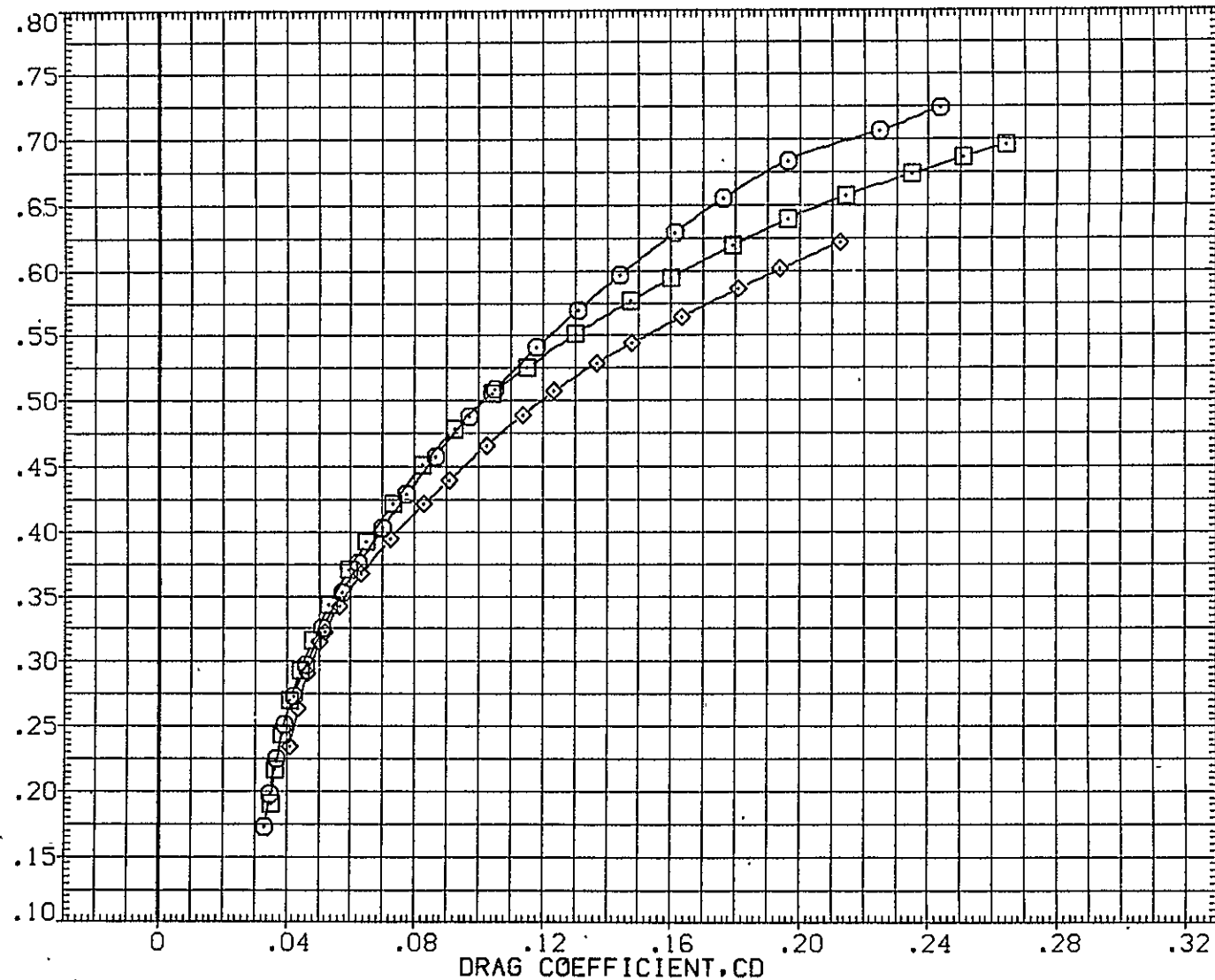


FIG. 25 747+ORB(10 DEG)+TIP FINS, NO SPOILERS, FLAPS 20 LAUNCH(S=+1)

ORB

CA5 ORB TC5 AT38.1 (PRES. K1 F20 H15.6 V9.1)(YGM071)

SYMBOL	MACH	PARAMETRIC VALUES			
○	.499	BETA	.000	STAB	1.000
□	.600	RUD-U	.000	RUD-L	.000
◇	.700	ELV-1B	.000	ELV-OB	3.000
		S1-2	.000	S3-4	.000
		S5-6	.000	IORB	9.700

REFERENCE INFORMATION		
SREF	2690.0000	SO.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN. X0
YMRP	.0000	IN. Y0
ZMRP	375.0000	IN. Z0
SCALE	.0300	

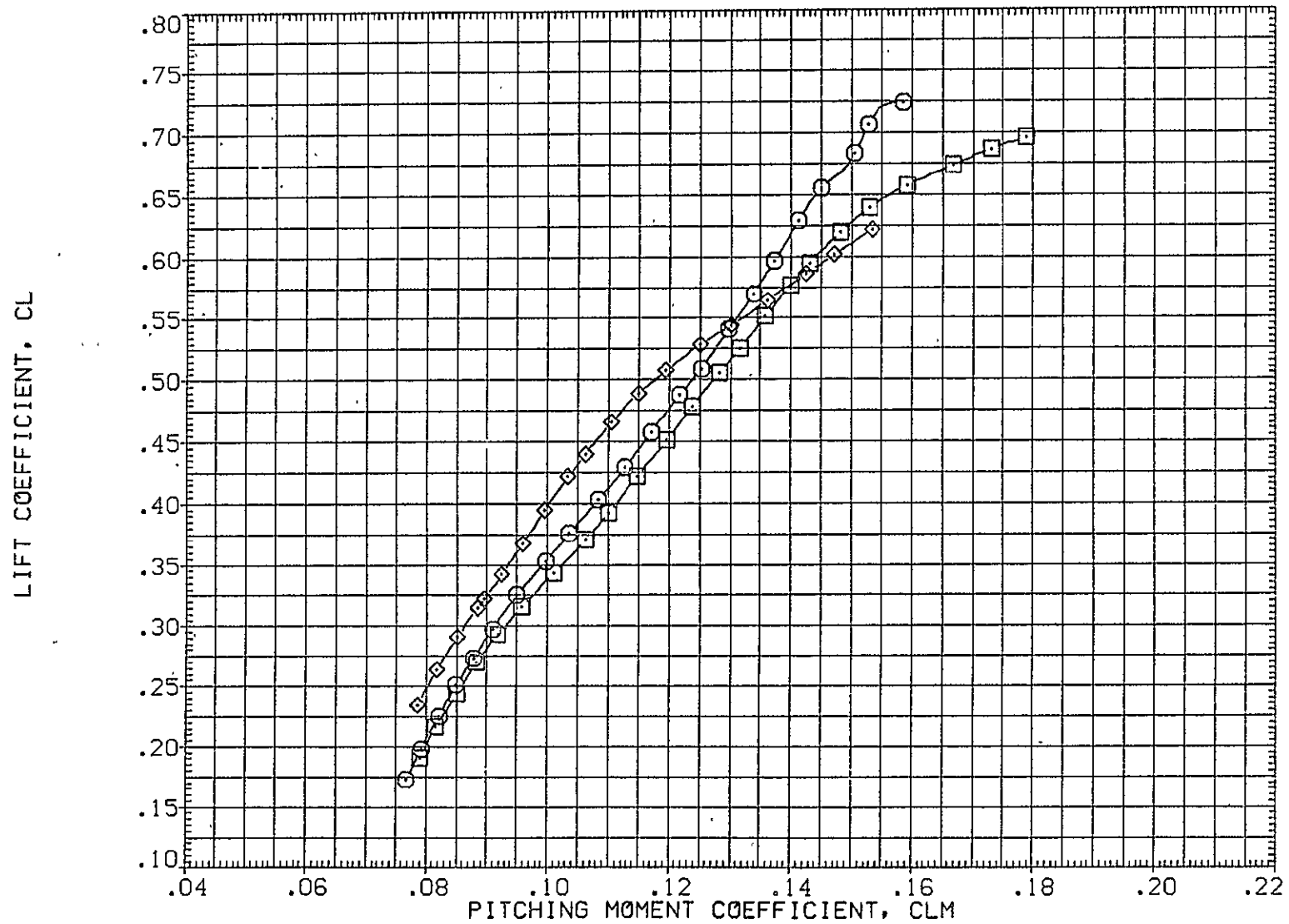


FIG. 25 747+ORB(10 DEG)+TIP FINS,NO SPOILERS,FLAPS 20 LAUNCH(S=+1)

ORB

SYMBOL	MACH	PARAMETRIC VALUES			
○	.499	BETA	.000	STAB	1.000
□	.600	RUD-U	.000	RUD-L	.000
◇	.700	ELV-1B	.000	ELV-0B	3.000
		S1-2	.000	S3-4	.000
		S5-6	.000	ICRB	9.700

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN. X0
YMRP	.0000	IN. Y0
ZMRP	375.0000	IN. Z0
SCALE	.0300	

CARRIER FRL ANGLE OF ATTACK, ALPHA, DEG.

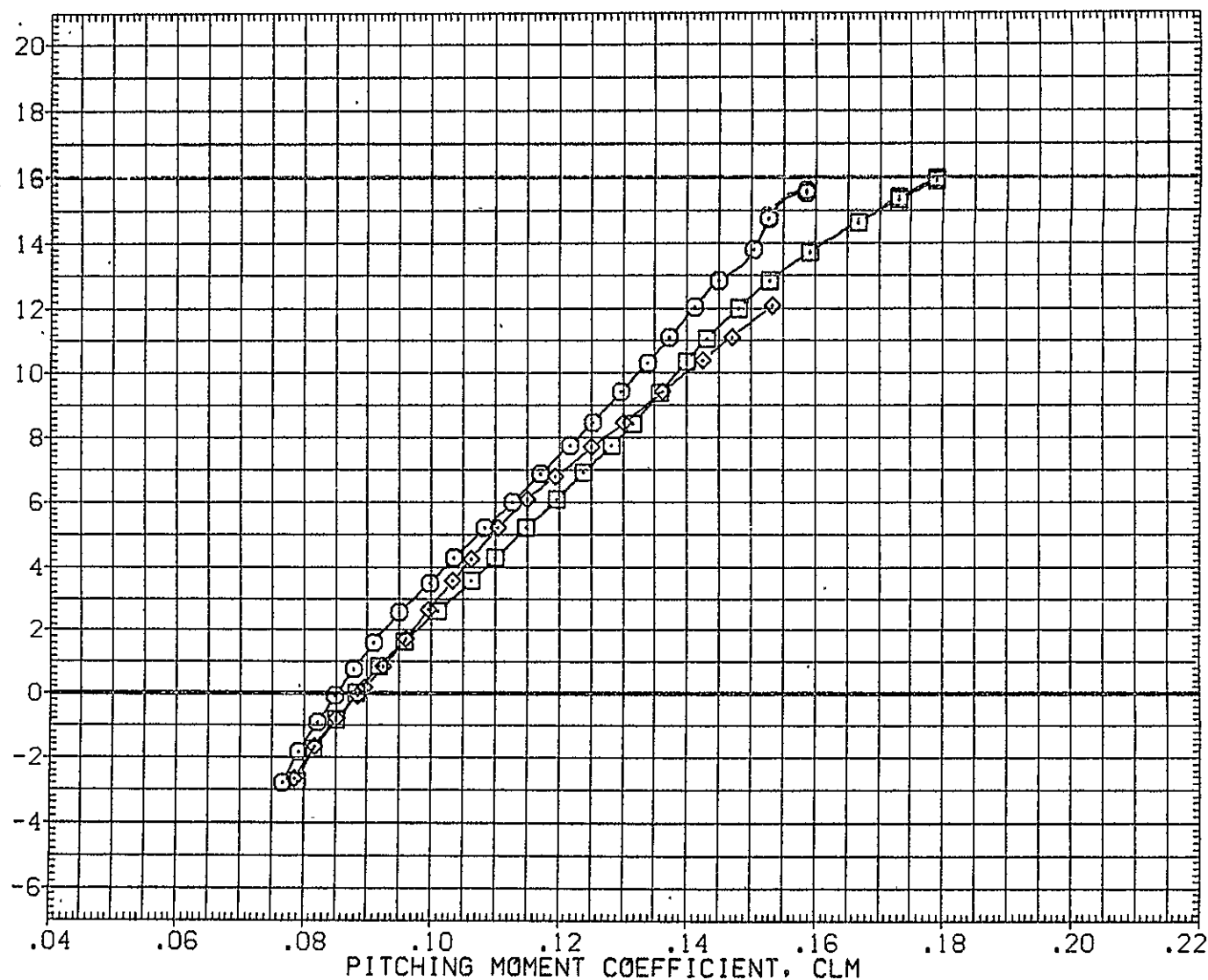


FIG. 25 747+ORB(10 DEG)+TIP FINS, NO SPOILERS, FLAPS 20 LAUNCH(S=+1)

ORB

CA5 K1 F20 H15.1A V9.1 (PLUS. ORB TC5 AT38.1)(RGM074)

SYMBOL		MACH	PARAMETRIC VALUES			REFERENCE INFORMATION		
<div>○</div> <div>□</div> <div>◇</div>	.500	BETA	.000	STAB	1.000	SREF	5500.0000	SQ.FT.
	.600	RUD-U	.000	RUD-L	.000	LREF	327.8000	IN.
	.700	ELV-1B	.000	ELV-0B	3.000	BRCF	2348.0000	IN.
		S1-2	.000	S3-4	.000	XMRP	1339.9100	IN. XC
		S5-6	.000	10RB	9.700	YMRP	.0000	IN. YC
						ZMRP	190.7500	IN. ZC
						SCALE	.0300	

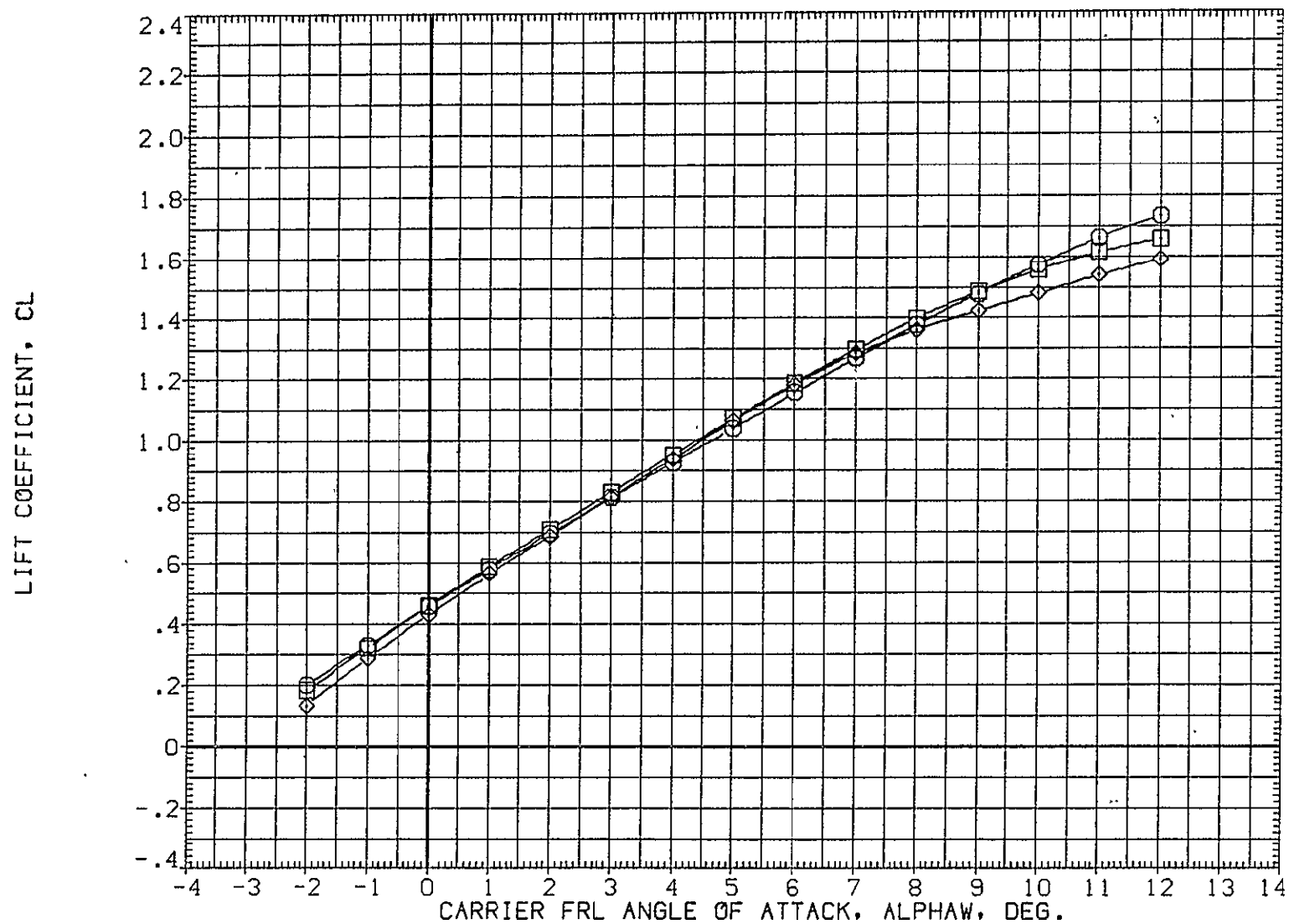


FIG. 26 747+ORB(10 DEG),BASIC TAIL, FLAPS 20 LAUNCH(S=+1)

CA5 K1 F20 H15.1A V9.1 (PLUS. ORB TC5 AT38.1)(RGM074)

SYMBOL	MACH	PARAMETRIC VALUES				REFERENCE INFORMATION		
○	.500	BETA	.000	STAB	1.000	SREF	5500.0000	SQ.FT.
□	.600	RUD-U	.000	RUD-L	.000	LREF	327.8000	IN.
◇	.700	ELV-IB	.000	ELV-OB	3.000	BREF	2348.0000	IN.
		S1-2	.000	S3-4	.000	XMRP	1339.9100	IN. XC
		S5-6	.000	IORB	9.700	YMRP	.0000	IN. YC
						ZMRP	190.7500	IN. ZC
						SCALE	.0300	

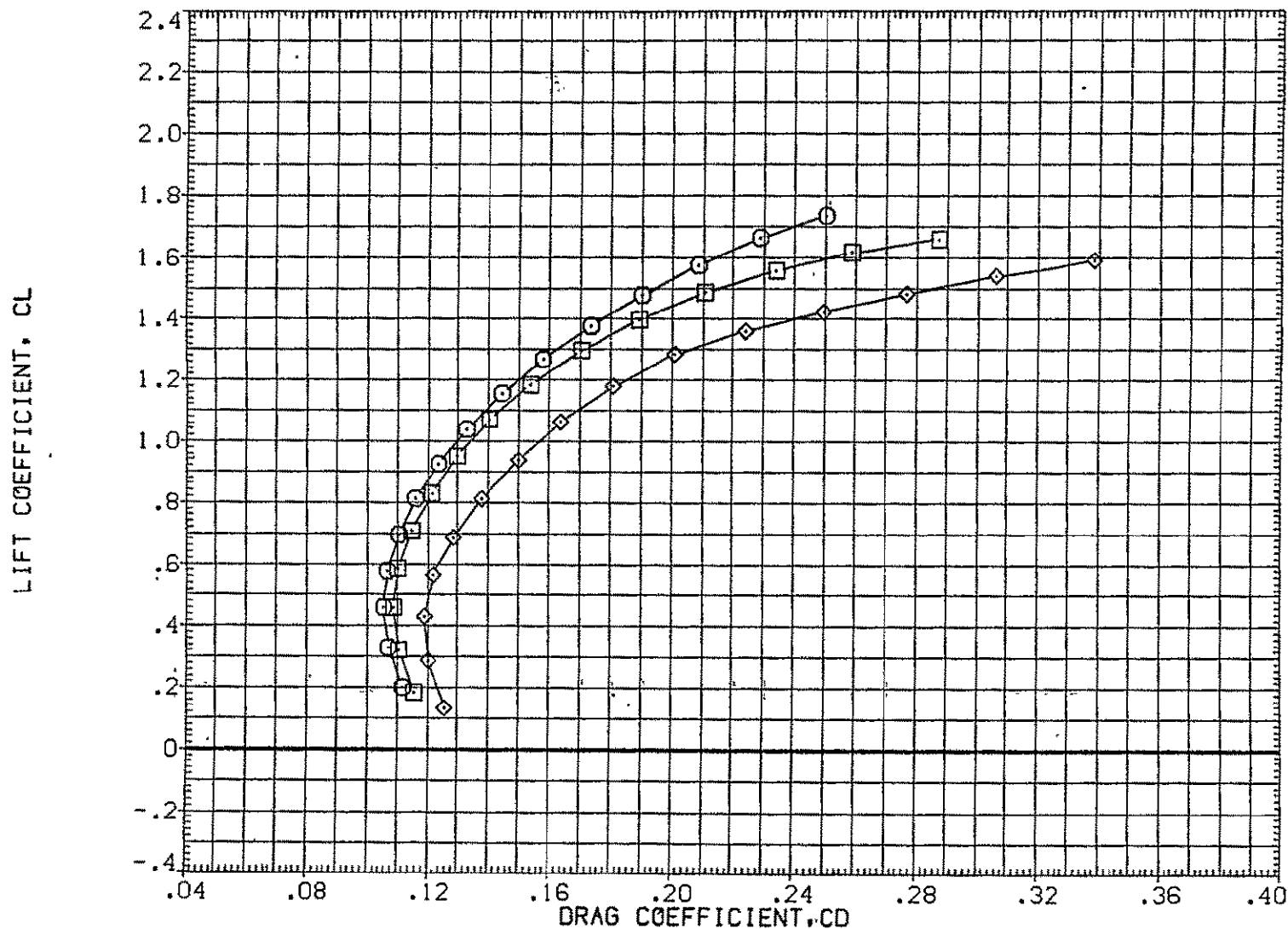


FIG. 26 747+ORB(10 DEG),BASIC TAIL, FLAPS 20 LAUNCH(S=+1)

2-3

CA5 K1 F20 H15.1A V9.1 (PLUS. 0RB TC5 AT38.1)(RGM074)

SYMBOL	MACH	PARAMETRIC VALUES				REFERENCE INFORMATION		
○	.500	BETA	.000	STAB	1.000	SREF	5500.0000	SQ.FT.
□	.600	RUD-U	.000	RUD-L	.000	LREF	327.8000	IN.
◇	.700	ELV-1B	.000	ELV-0B	3.000	BREF	2348.0000	IN.
		S1-2	.000	S3-4	.000	XMRP	1339.9100	IN. XC
		S5-6	.000	10RB	9.700	YMRP	.0000	IN. YC
						ZMRP	190.7500	IN. ZC
						SCALE	.0300	

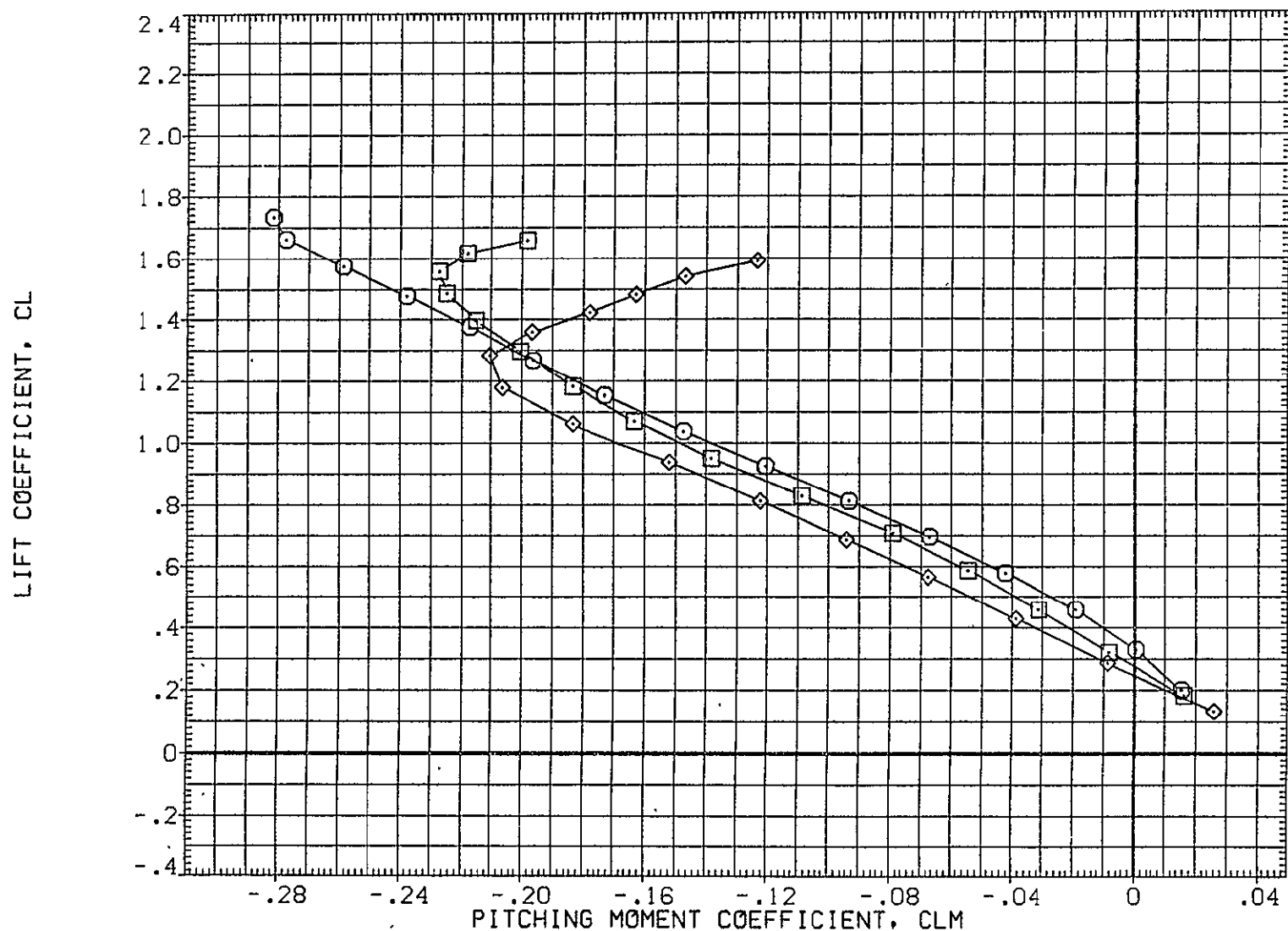


FIG. 26 747+0RB(10 DEG),BASIC TAIL, FLAPS 20 LAUNCH(S=+1)

CA5 K1 F20 H15.1A V9.1 (PLUS. ORB TC5 AT38.1)(RGM074)

SYMBOL	MACH	PARAMETRIC VALUES				REFERENCE INFORMATION		
○	.500	BETA	.000	STAB	1.000	SREF	5500.0000	SQ.FT.
□	.600	RUD-U	.000	RUD-L	.000	LREF	327.8000	IN.
◇	.700	ELV-1B	.000	ELV-0B	3.000	BREF	2348.0000	IN.
		S1-2	.000	S3-4	.000	XMRP	1339.9100	IN. XC
		S5-6	.000	10RB	9.700	YMRP	.0000	IN. YC
						ZMRP	190.7500	IN. ZC
						SCALE	.0300	

CARRIER FRL ANGLE OF ATTACK. ALPHA. DEG.

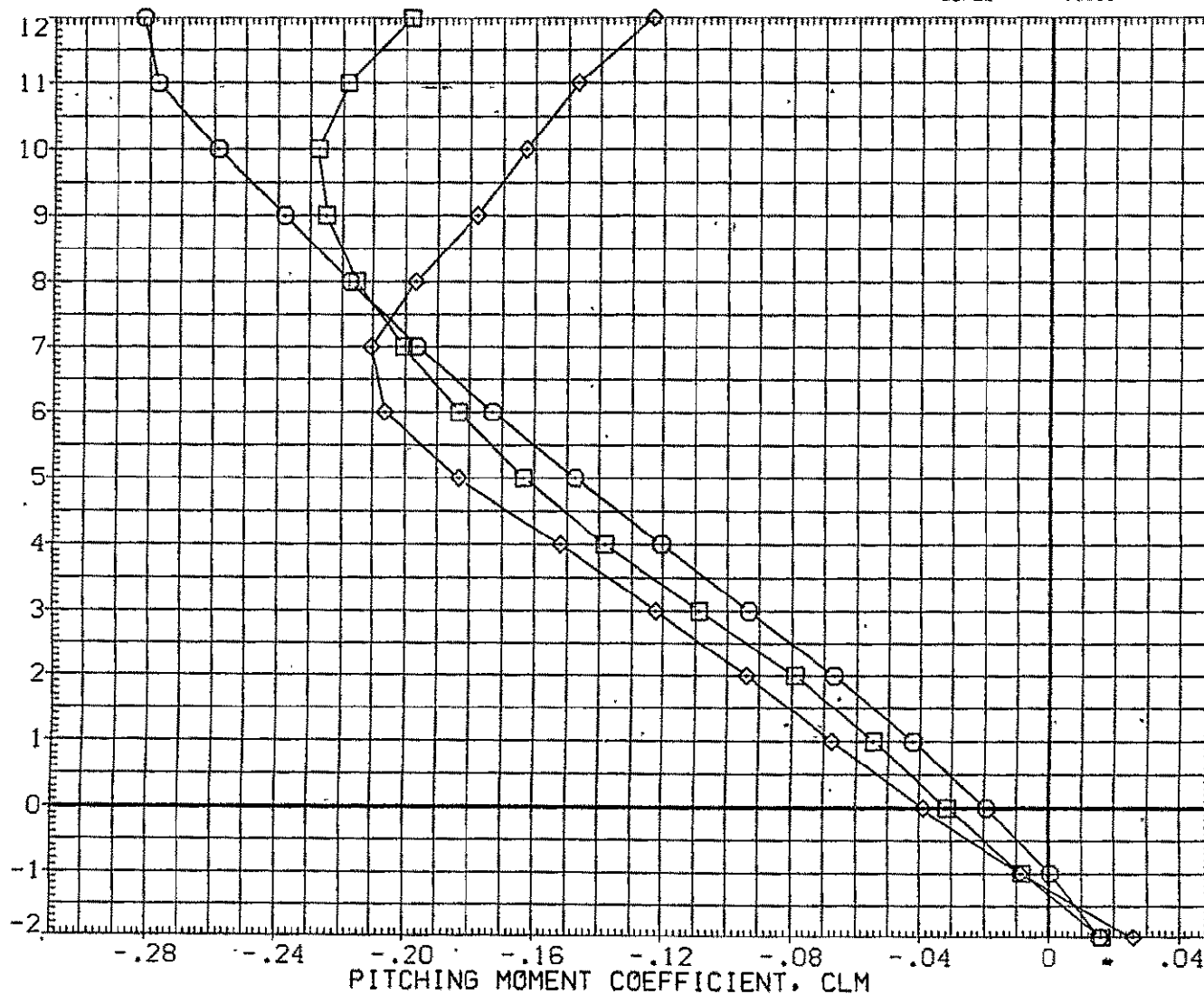


FIG. 26 747+0RB(10 DEG),BASIC TAIL, FLAPS 20 LAUNCH(S=+1)

CA5 K1 F20 H15.1A V9.1 MINUS 0RB TC5 AT38.1 (BGM074)									
SYMBOL	MACH	PARAMETRIC VALUES				REFERENCE INFORMATION			
	.500	BETA	.000	STAB	1.000	SREF	5500.0000	SO FT.	
	.600	RUD-U	.000	RUD-L	.000	LREF	327.8000	IN.	
	.700	ELV-1B	.000	ELV-0B	3.000	BREF	2348.0000	IN.	
		S1-2	.000	S3-4	.000	XMRP	1339.9100	IN. XC	
		SS-6	.000	10RB	9.700	YMRP	.0000	IN. YC	
						ZMRP	190.7500	IN. ZC	
						SCALE	.0300		

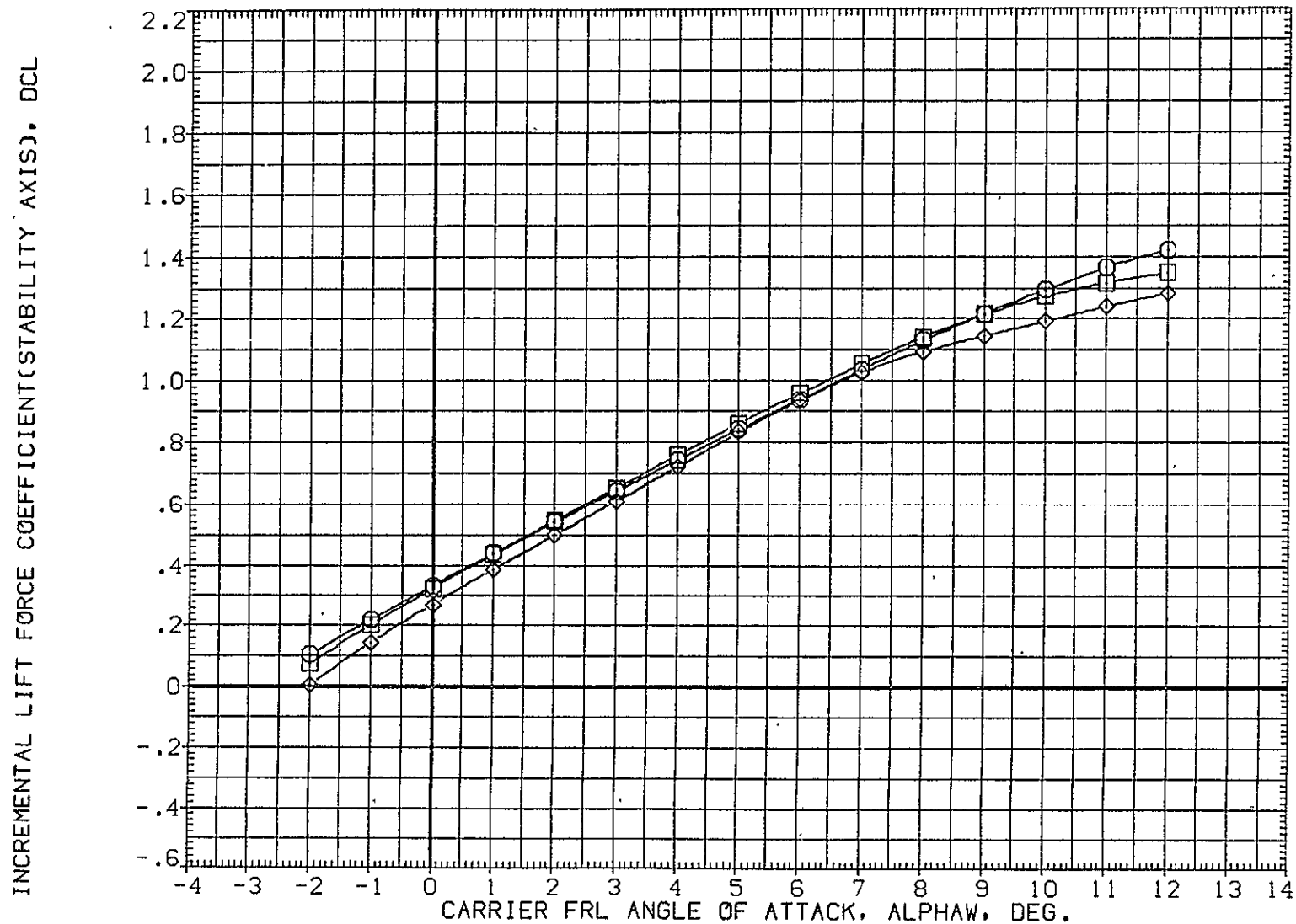


FIG. 27 747+0RB(10 DEG),BASIC TAIL, FLAPS 20 LAUNCH(S=+1)

SYMBOL
 ○
 □
 ◇

MACH	PARAMETRIC VALUES			
.500	BETA	.000	STAB	1.000
.600	RUD-U	.000	RUD-L	.000
.700	ELV-1B	.000	ELV-0B	3.000
	S1-2	.000	S3-4	.000
	S5-6	.000	10RB	9.700

REFERENCE INFORMATION

SREF	5500.0000	SQ.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

INCREMENTAL LIFT FORCE COEFFICIENT(STABILITY AXIS), DCL

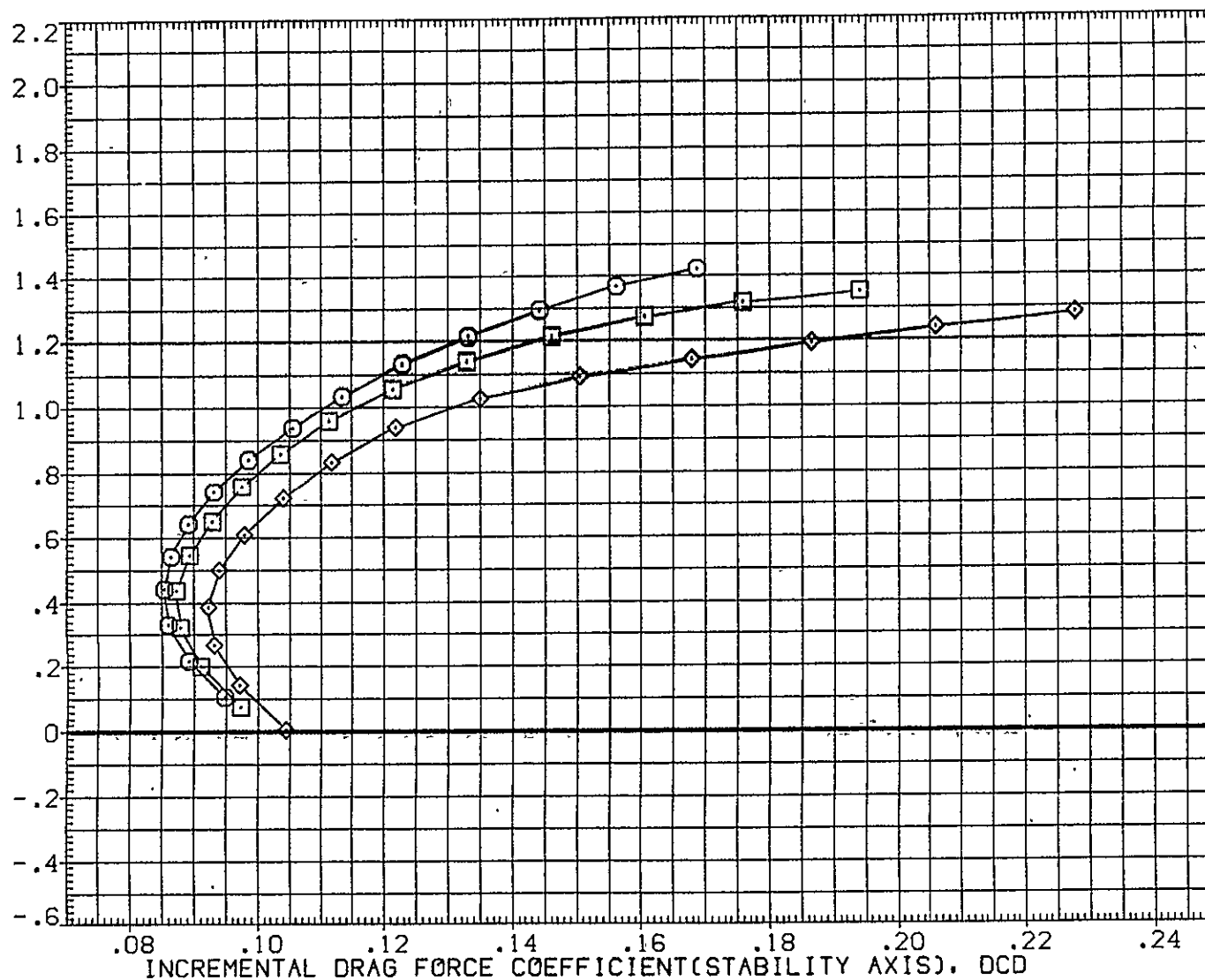


FIG. 27 747+0RB(10 DEG), BASIC TAIL, FLAPS 20 LAUNCH(S=+1)

747

CA5 K1 F20 H15.1A V9.1 MINUS 0RB TC5 AT38.1 (BGM074)

SYMBOL
○
□
◇

MACH

BETA

RUD-U

ELV-IB

S1-2

S5-6

PARAMETRIC VALUES

.000

STAB

.000

RUD-L

.000

ELV-OB

.000

S3-4

.000

IORB

9.700

1.000

.000

.000

3.000

.000

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REFERENCE INFORMATION

SREF	5500.0000	SQ.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

INCREMENTAL LIFT FORCE COEFFICIENT(STABILITY AXIS), DCL

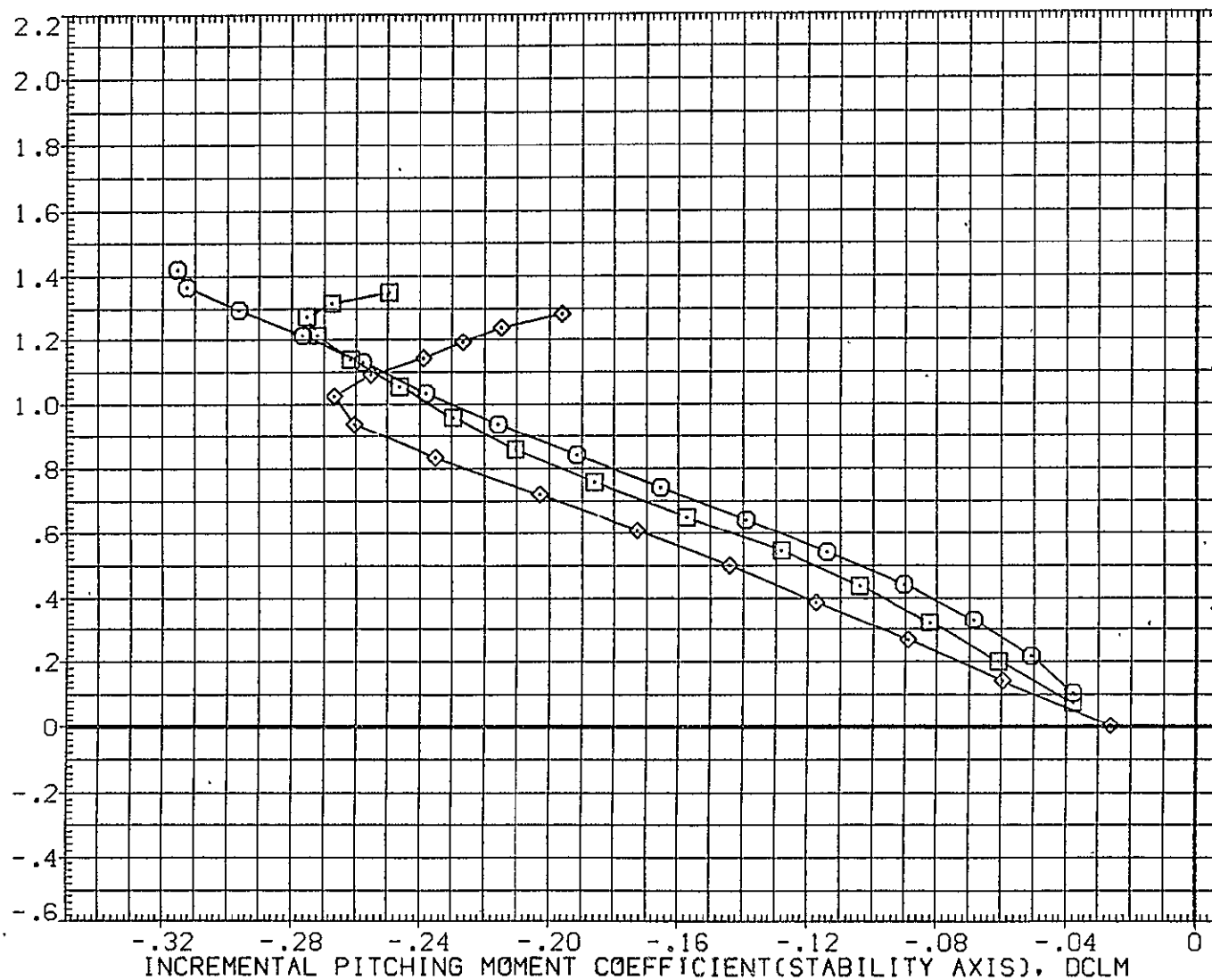


FIG. 27 747+0RB(10 DEG),BASIC TAIL, FLAPS 20 LAUNCH(S=+1)

747

SYMBOL

MACH

PARAMETRIC VALUES

REFERENCE INFORMATION

○
□
◇.500
.600
.700BETA
RUD-U
ELV-IB
S1-2
S5-6.000
.000
.000
.000
.000STAB
RUD-L
ELV-OB
S3-4
I0RB1.000
.000
3.000
.000
9.700

SREF	5500.0000	SQ.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

CARRIER FRL ANGLE OF ATTACK, ALPHA, DEG.

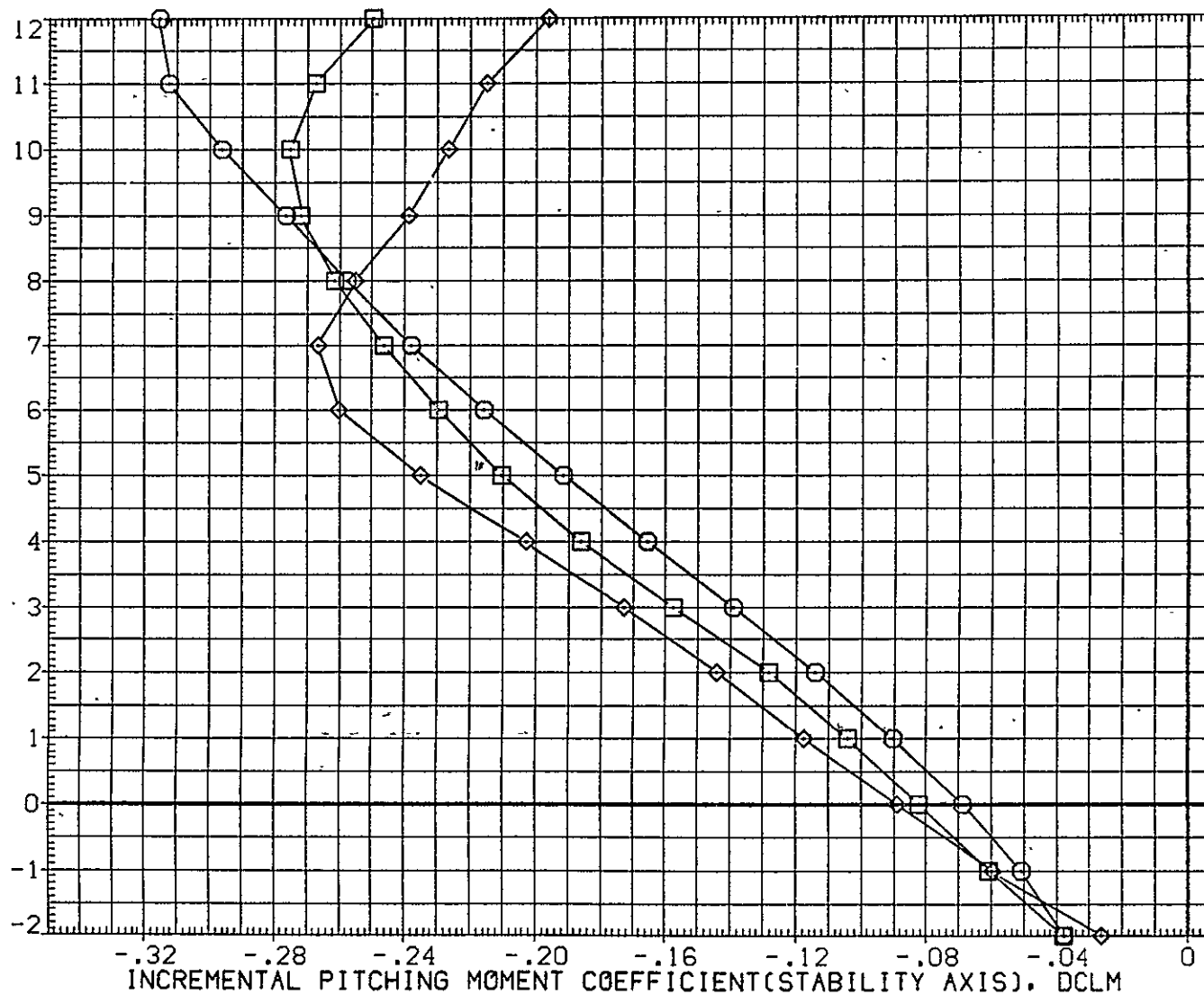


FIG. 27 747+0RB(10 DEG),BASIC TAIL, FLAPS 20 LAUNCH(S=+1)

747

CA5 0RB TC5 AT38.1 (PRES. K1 F20 H15.1A V9.1)(YGM074)

SYMBOL	MACH	PARAMETRIC VALUES				REFERENCE INFORMATION		
○	.500	BETA	.000	STAB	1.000	SREF	2690.0000	50. FT.
□	.600	RUD-U	.000	RUD-L	.000	LREF	474.8100	IN
◇	.700	ELV-1B	.000	ELV-0B	3.000	BREF	936.6800	IN
		S1-2	.000	S3-4	.000	XMRP	1109.0000	IN X0
		S5-6	.000	10RB	9.700	YMRP	.0000	IN Y0
						ZMRP	375.0000	IN Z0
						SCALE	.0300	

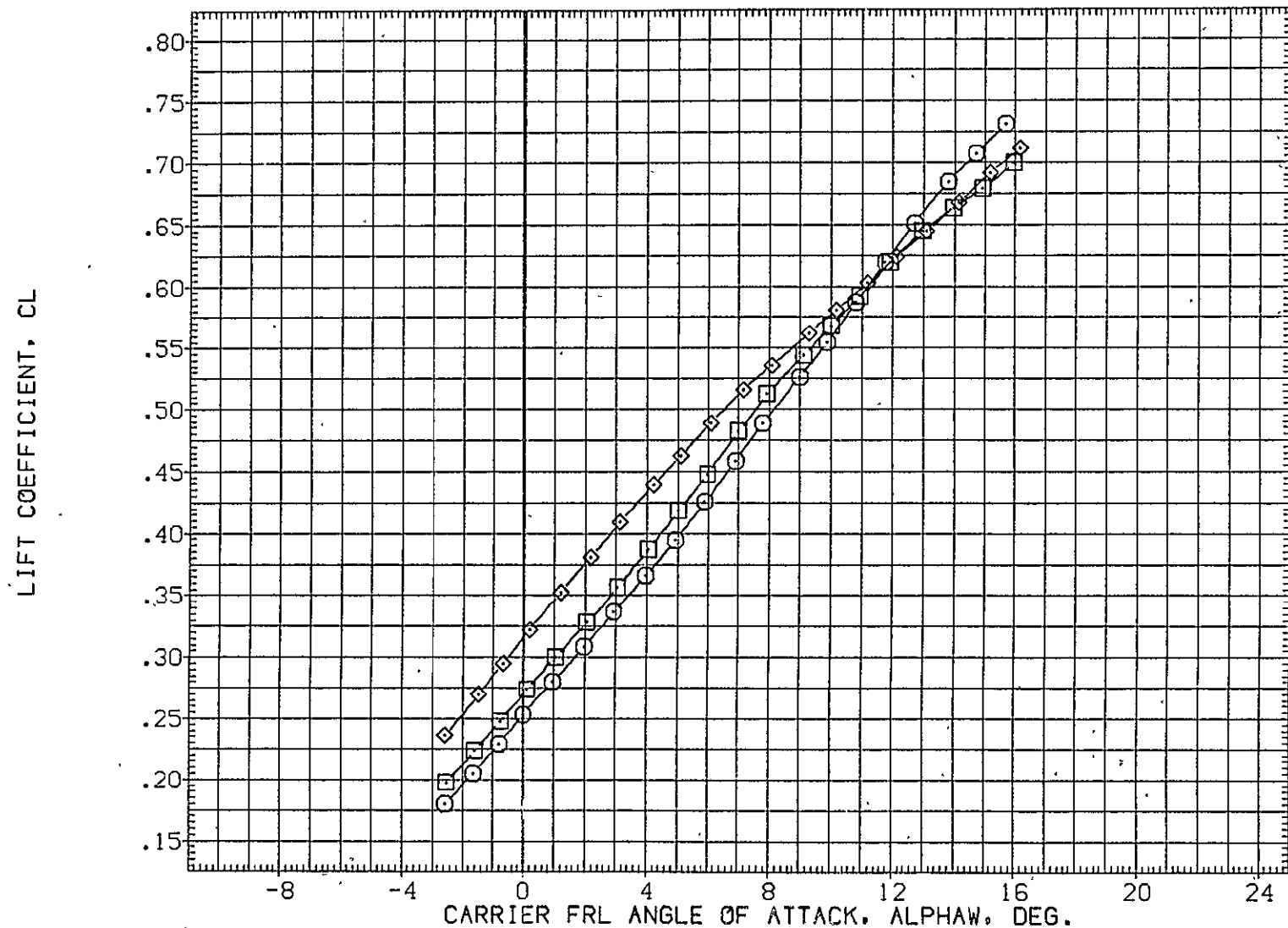


FIG. 28 747+0RB(10 DEG),BASIC TAIL, FLAPS 20 LAUNCH(S=+1)

0RB

SYMBOL	MACH	PARAMETRIC VALUES			
○	.500	BETA	.000	STAB	1.000
□	.600	RUD-U	.000	RUD-L	.000
◇	.700	ELV-IB	.000	ELV-OB	3.000
		S1-2	.000	S3-4	.000
		S5-6	.000	IORB	9.700

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN. X0
YMRP	.0000	IN. Y0
ZMRP	375.0000	IN. Z0
SCALE	.0300	

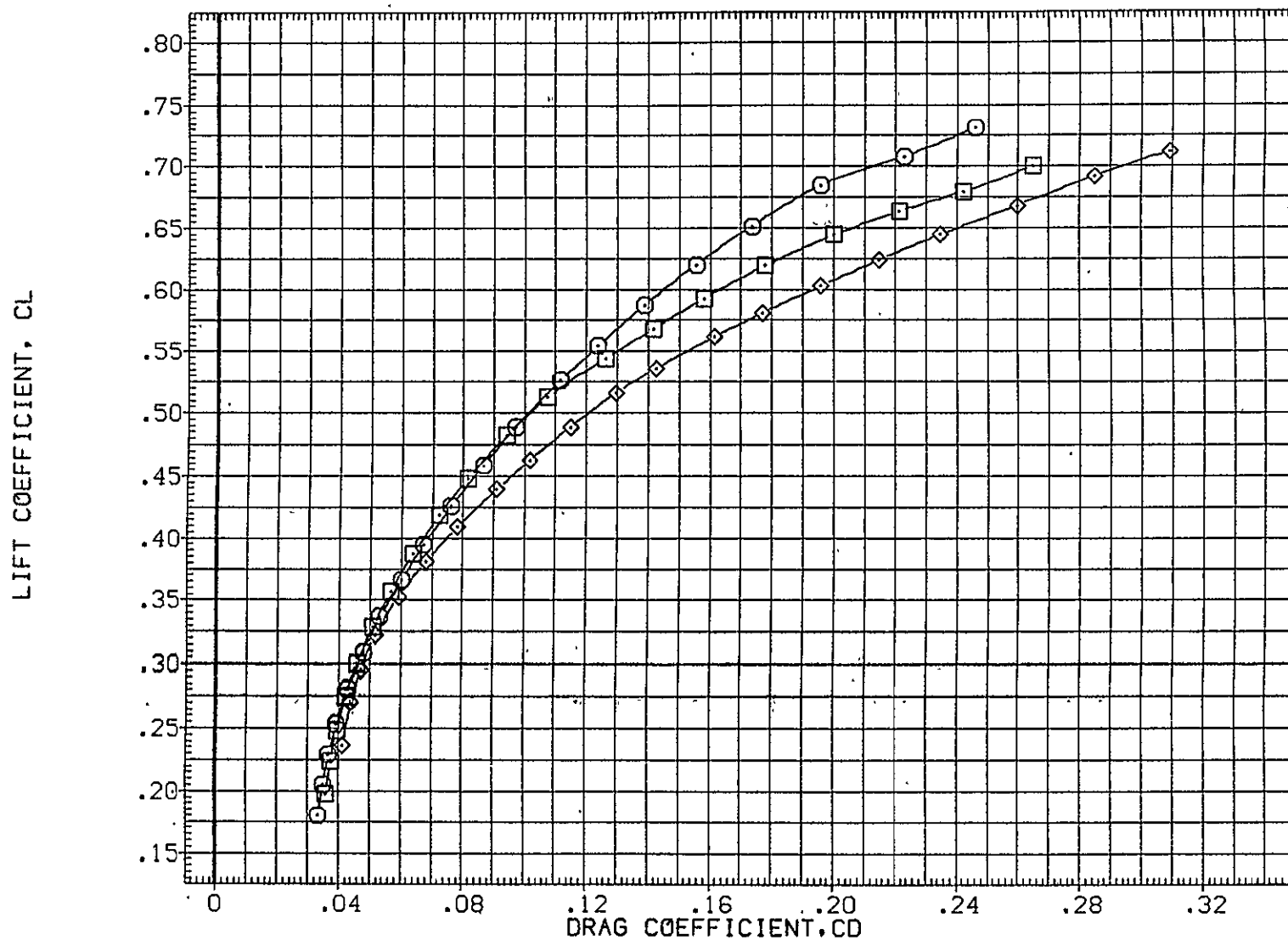


FIG. 28 747+ORB(10 DEG),BASIC TAIL, FLAPS 20 LAUNCH(S=+1)

ORB

CA5 0RB TC5 AT38.1 (PRES. K1 F20 H15.1A V9.1)(YGM074)

SYMBOL
○
□
◇

MACH
.500
.600
.700

PARAMETRIC VALUES
BETA .000 STAB 1.000
RUD-U .000 RUD-L .000
ELV-1B .000 ELV-0B 3.000
S1-2 .000 S3-4 .000
S5-6 .000 10RB 9.700

REFERENCE INFORMATION
SREF 2690.0000 SQ.FT.
LREF 474.8100 IN.
BREF 936.8800 IN.
XMRP 1109.0000 IN. X0
YMRP .0000 IN. Y0
ZMRP 375.0000 IN. Z0
SCALE .0300

LIFT COEFFICIENT, CL

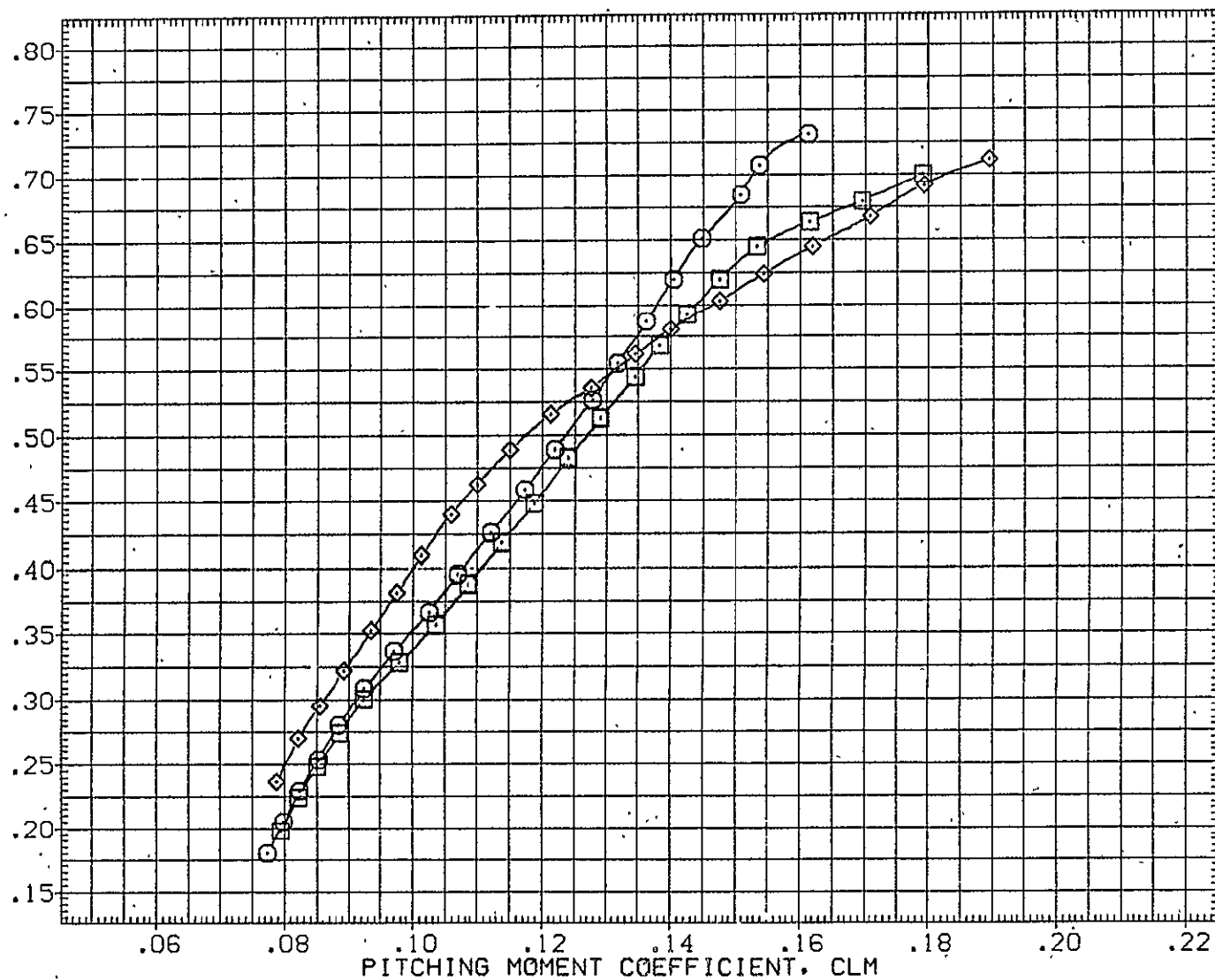


FIG. 28 747+0RB(10 DEG), BASIC TAIL, FLAPS 20 LAUNCH(S=+1)

0RB

SYMBOL

○
□
◇

MACH

BETA
RUD-U
ELV-1B
S1-2
S5-6

PARAMETRIC VALUES

.000 STAB 1.000
.000 RUD-L .000
.000 ELV-OB 3.000
.000 S3-4 .000
.000 IORB 9.700

REFERENCE INFORMATION

SREF 2690.0000 SQ.FT.
LREF 474.8100 IN.
BREF 936.6800 IN.
XMRP 1109.0000 IN. X0
YMRP .0000 IN. Y0
ZMRP 375.0000 IN. Z0
SCALE .0300

CARRIER FRL ANGLE OF ATTACK, ALPHA, DEG.

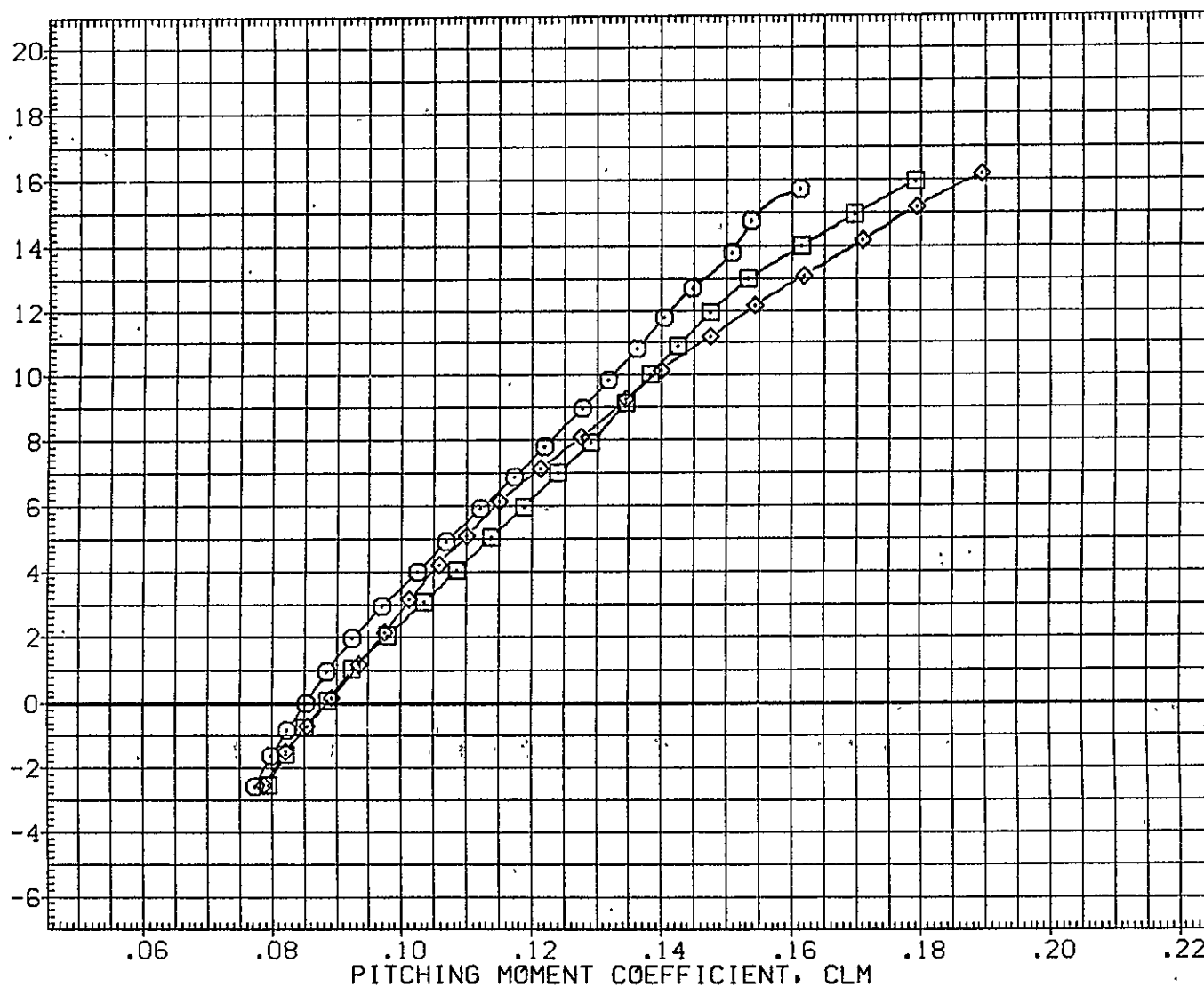


FIG. 28 747+ORB(10 DEG), BASIC TAIL, FLAPS 20 LAUNCH(S=+1)

ORB

CA5 K1 F20 H15.1A V9.1 (PLUS. 0RB TC5 AT38.1)(RGM075)

SYMBOL
○
□
◇

MACH

.500
.600
.700

BETA
RUD-U
ELV-1B
S1-2
S5-6

PARAMETRIC VALUES

.000 STAB 1.000
.000 RUD-L .000
.000 ELV-0B 3.000
45.000 S3-4 45.000
45.000 10RB 9.700

REFERENCE INFORMATION

SREF 5500.0000 SQ.FT.
LREF 327.8000 IN.
BREF 2348.0000 IN.
XMRP 1339.9100 IN. XC
YMRP .0000 IN. YC
ZMRP 190.7500 IN. ZC
SCALE .0300

LIFT COEFFICIENT, CL

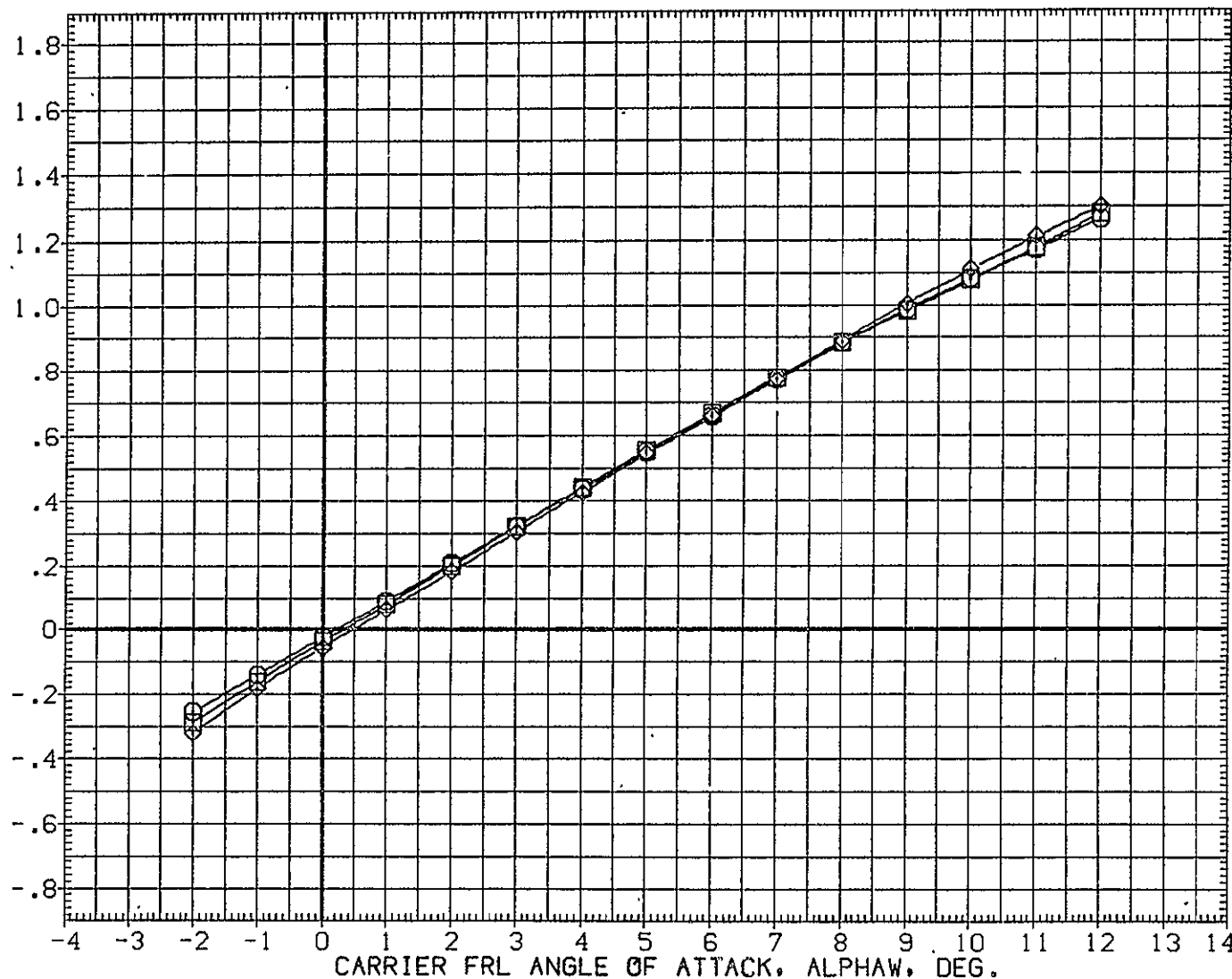


FIG. 29 747+0RB(10 DEG)+SP45,BASIC TAIL, FLAPS 20 LAUNCH(S=+1)

SYMBOL

MACH

PARAMETRIC VALUES

REFERENCE INFORMATION

○
□
◇.500
.600
.700BETA
RUD-U
ELV-IB
S1-2
S5-6.000
.000
.000
45.000
45.000STAB
RUD-L
ELV-OB
S3-4
IORB1.000
.000
3.000
45.000
9.700

SREF	5500.0000	50.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

LIFT COEFFICIENT, CL

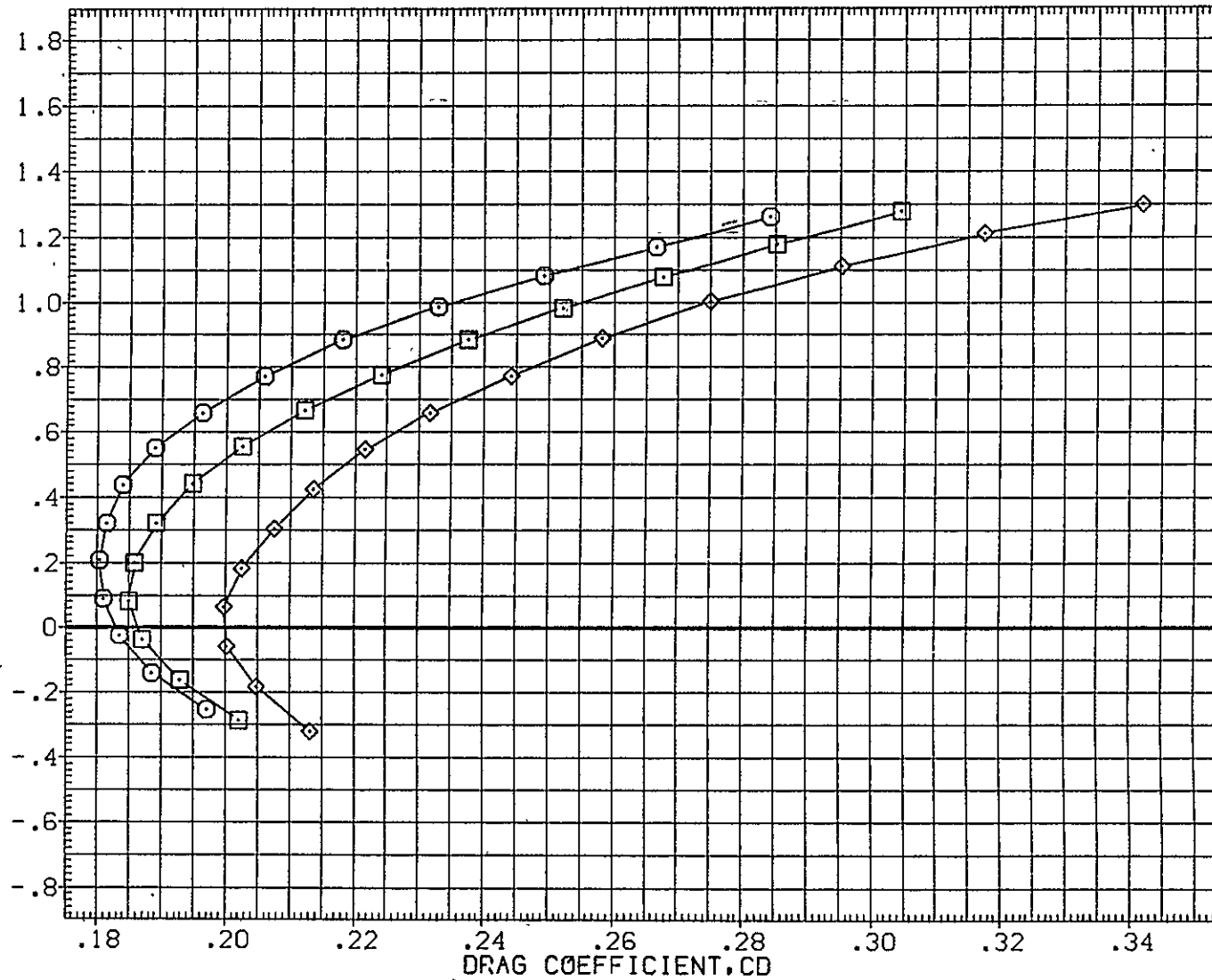


FIG. 29 747+0RB(10 DEG)+SP45,BASIC TAIL, FLAPS 20 LAUNCH(S=+1)

TOTAL

CA5 K1 F20 H15.1A V9.1 (PLUS. 0RB TC5 AT38.1)(RGM075)

SYMBOL	MACH	PARAMETRIC VALUES			
○	.500	BETA	.000	STAB	1.000
□	.600	RUD-U	.000	RUD-L	.000
◇	.700	ELV-1B	.000	ELV-0B	3.000
		S1-2	45.000	S3-4	45.000
		S5-6	45.000	10RB	9.700

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

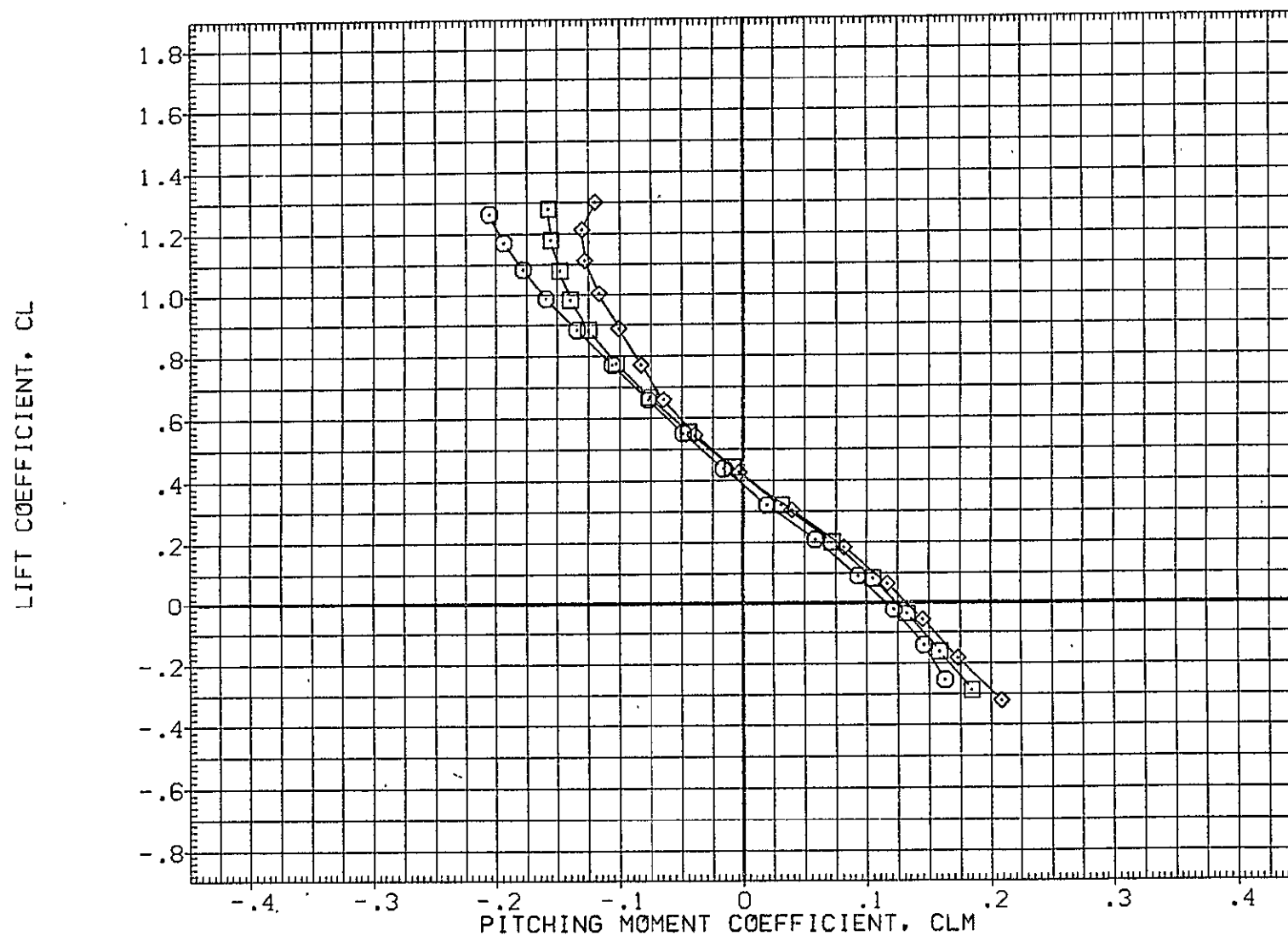


FIG. 29 747+0RB(10 DEG)+SP45,BASIC TAIL, FLAPS 20 LAUNCH(S=+1)

SYMBOL	MACH	PARAMETRIC VALUES			
○	.500	BETA	.000	STAB	1.000
□	.600	RUD-U	.000	RUD-L	.000
◇	.700	ELV-1B	.000	ELV-0B	3.000
		S1-2	45.000	S3-4	45.000
		S5-6	45.000	10RB	9.700

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XM RP	1339.9100	IN. XC
YM RP	.0000	IN. YC
ZM RP	190.7500	IN. ZC
SCALE	.0300	

CARRIER FRL ANGLE OF ATTACK, ALPHAW, DEG.

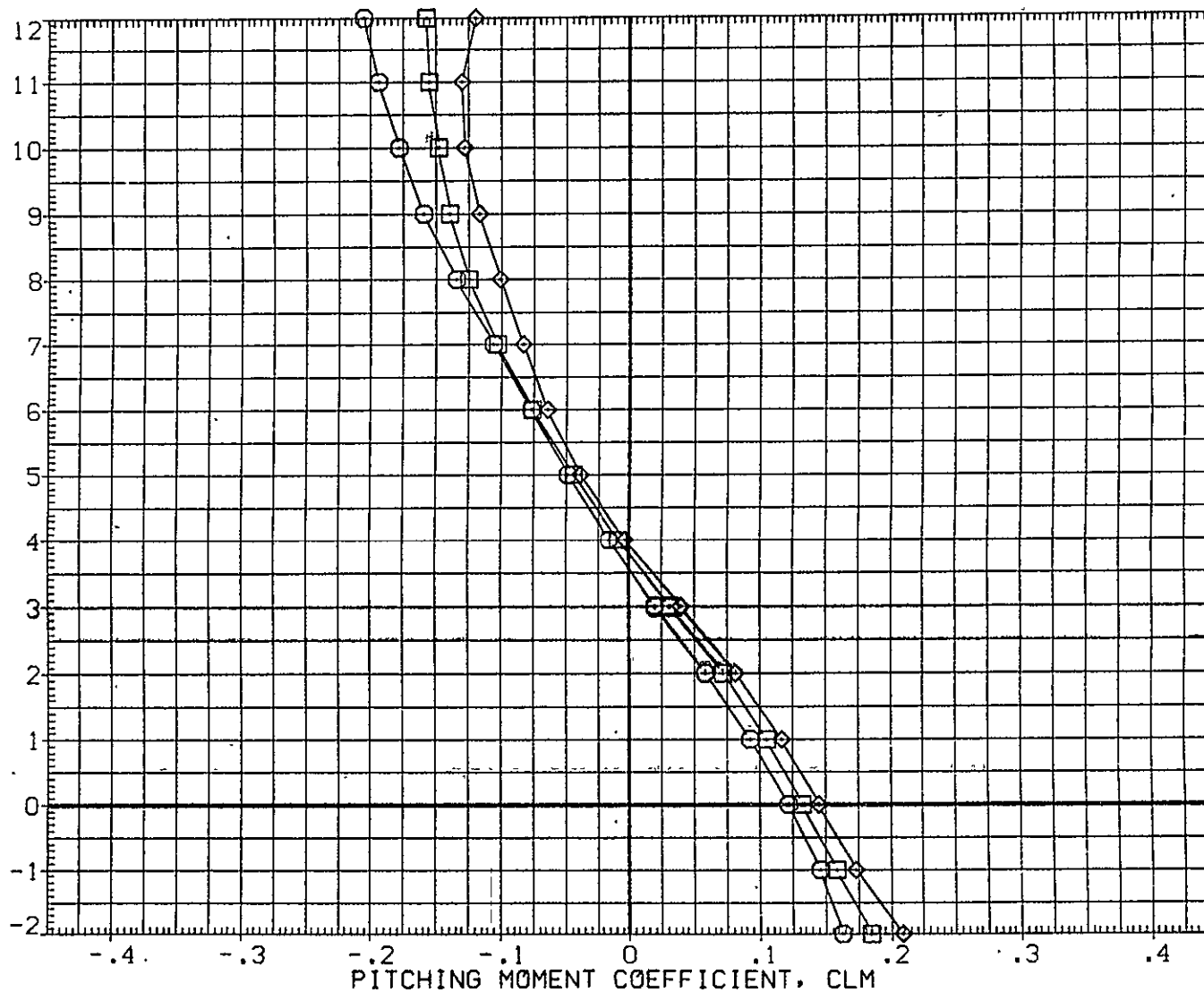


FIG. 29 747+0RB(10 DEG)+SP45,BASIC TAIL, FLAPS 20 LAUNCH(S=+1)

CA5 K1 F20 H15.1A V9.1 MINUS ORB TC5 AT38.1 (BGM075)

SYMBOL

○
□
◇

MACH

BETA
RUD-U
ELV-1B
S1-2
S5-6

PARAMETRIC VALUES

.000 STAB 1.000
.000 RUD-L .000
.000 ELV-OB 3.000
45.000 S3-4 45.000
45.000 IORB 9.700

REFERENCE INFORMATION

SREF 5500.0000 SQ.FT.
LREF 327.8000 IN.
BREF 2348.0000 IN.
XMRP 1339.9100 IN. XC
YMRP .0000 IN. YC
ZMRP 190.7500 IN. ZC
SCALE .0300

INCREMENTAL LIFT FORCE COEFFICIENT(STABILITY AXIS), DCL

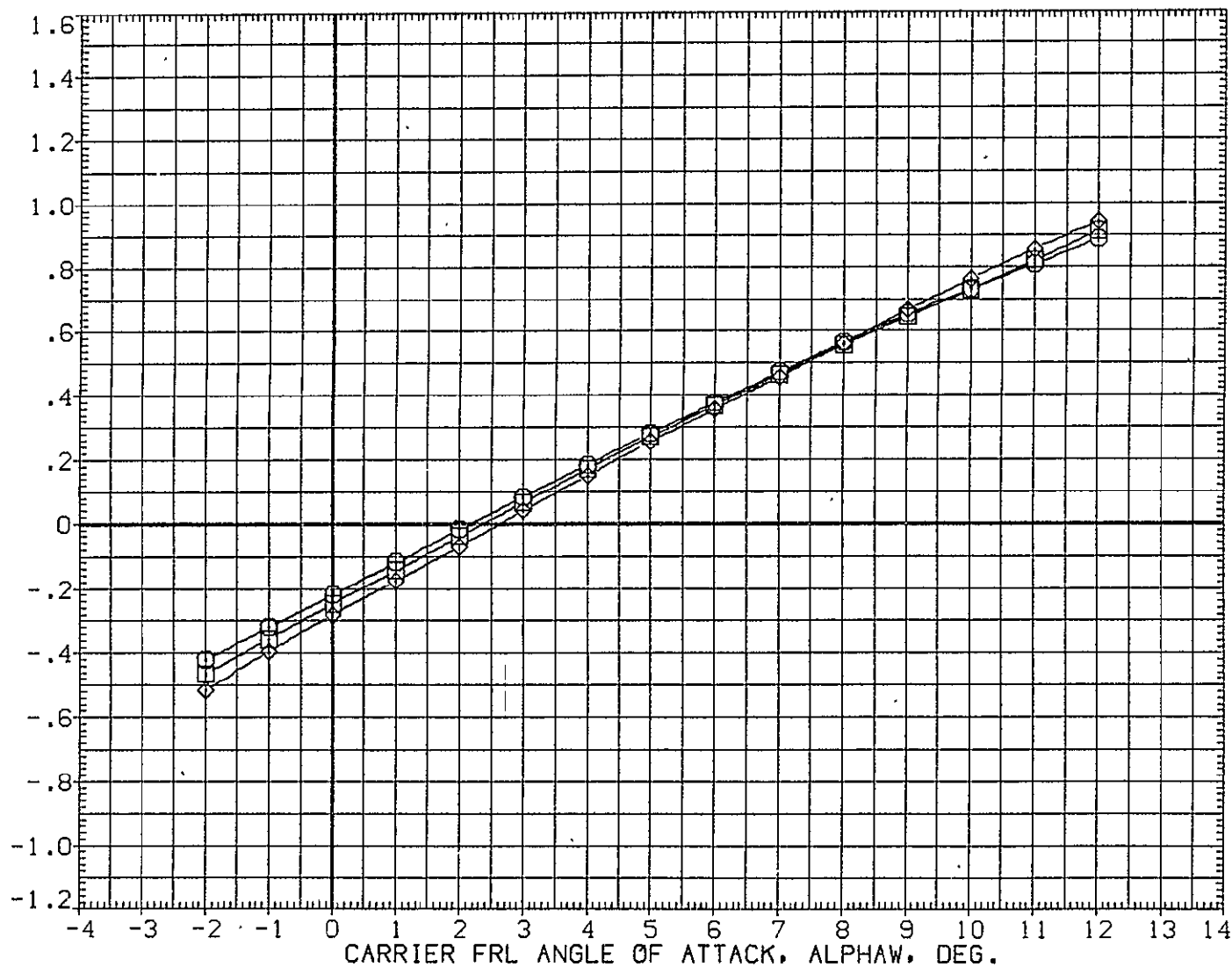


FIG. 30 747+ORB(10 DEG)+SP45,BASIC TAIL, FLAPS 20 LAUNCH(S=+1)

SYMBOL	MACH	PARAMETRIC VALUES				REFERENCE INFORMATION		
○	.500	BETA	.000	STAB	1.000	SREF	5500.0000	SQ.FT.
□	.600	RUD-U	.000	RUD-L	.000	LREF	327.8000	IN.
◇	.700	ELV-IB	.000	ELV-OB	3.000	BREF	2348.0000	IN.
		S1-2	45.000	S3-4	45.000	XMRP	1339.9100	IN. XC
		S5-6	45.000	IORB	9.700	YMRP	.0000	IN. YC
						ZMRP	190.7500	IN. ZC
						SCALE	.0300	

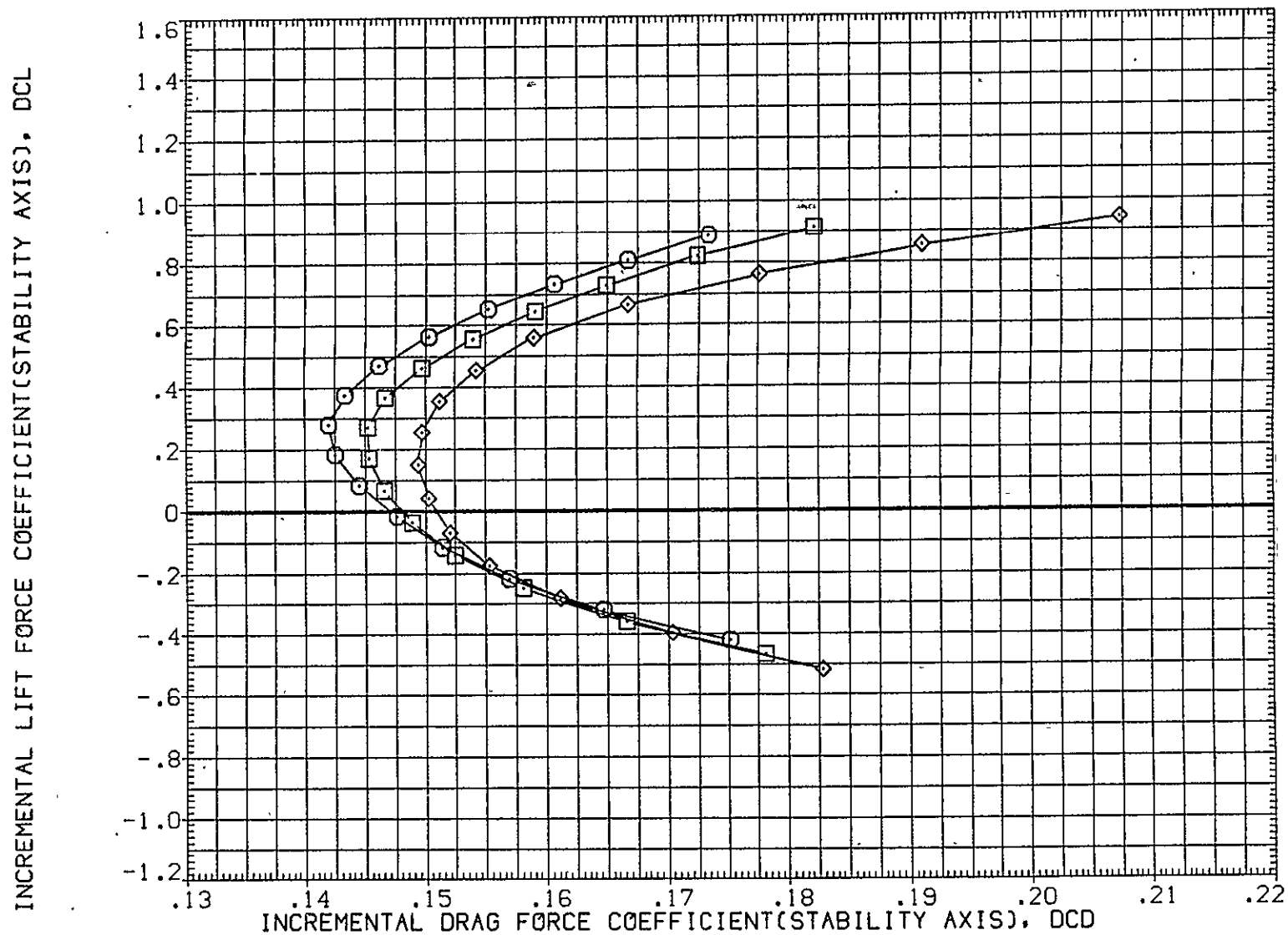


FIG. 30 747+ORB(10 DEG)+SP45,BASIC TAIL, FLAPS 20 LAUNCH(S=+1)

747

CA5 K1 F20 H15.1A V9.1 MINUS. 0RB TC5 AT38.1 (BGM075)

SYMBOL	MACH	PARAMETRIC VALUES				REFERENCE INFORMATION		
○	.500	BETA	.000	STAB	1.000	SREF	5500.0000	SQ.FT.
□	.600	RUD-U	.000	RUD-L	.000	LREF	327.8000	IN.
◇	.700	ELV-IB	.000	ELV-OB	3.000	BREF	2348.0000	IN.
		S1-2	45.000	S3-4	45.000	XMRP	1339.9100	IN. XC
		S5-6	45.000	10RB	9.700	YMRP	.0000	IN. YC
						ZMRP	190.7500	IN. ZC
						SCALE	.0300	

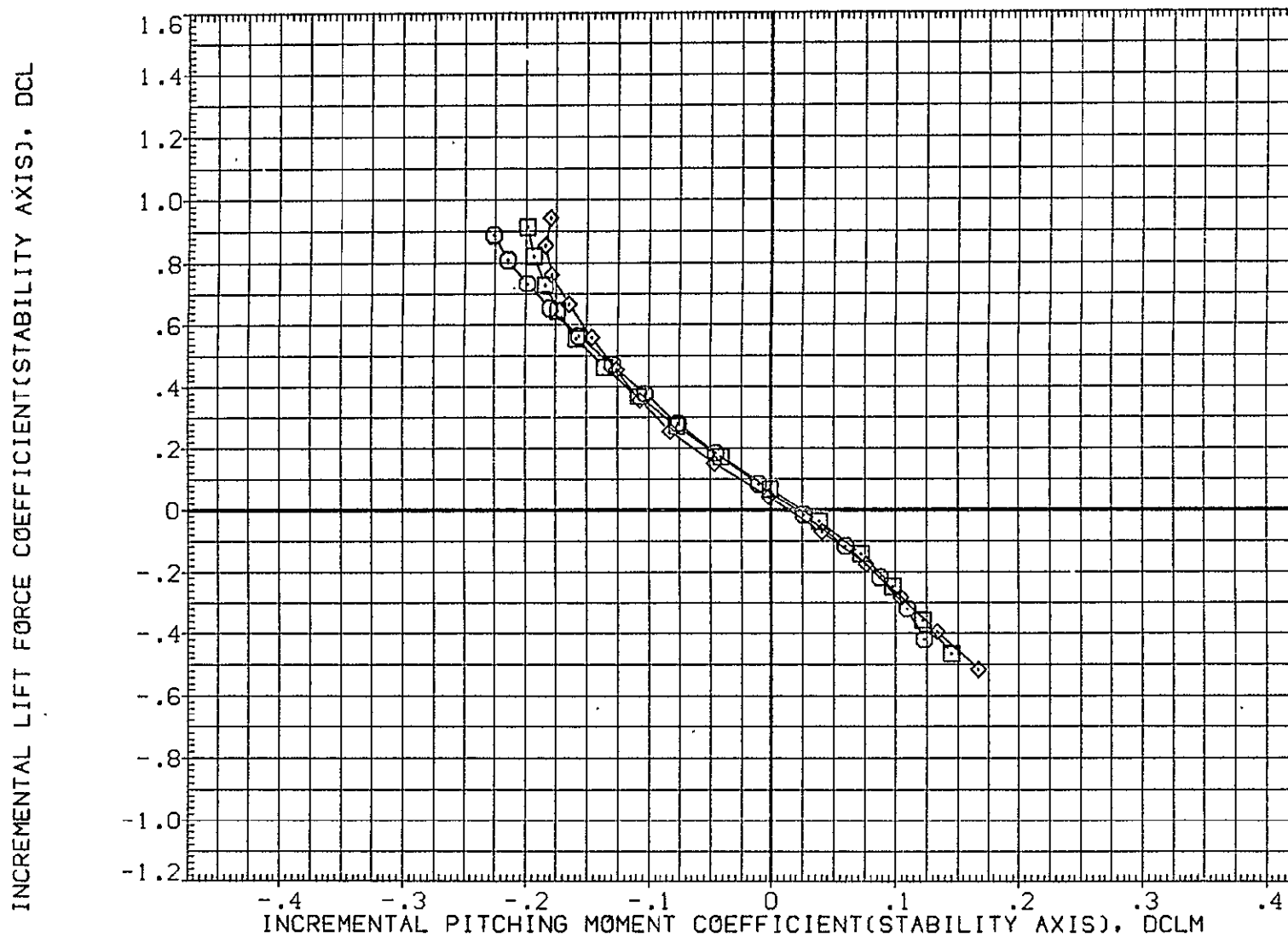


FIG. 30 747+0RB(10 DEG)+SP45,BASIC TAIL, FLAPS 20 LAUNCH(S=+1)

747

SYMBOL

○
□
◇

MACH

.500
.600
.700BETA
RUD-U
ELV-1B
S1-2
SS-6

PARAMETRIC VALUES

.000 STAB 1.000
.000 RUD-L .000
.000 ELV-0B 3.000
45.000 S3-4 45.000
45.000 10RB 9.700

REFERENCE INFORMATION

SREF 5500.0000 SQ.FT.
LREF 327.8000 IN.
BREF 2348.0000 IN.
XMRP 1339.9100 IN. XC
YMRP .0000 IN. YC
ZMRP 190.7500 IN. ZC
SCALE .0300

CARRIER FRL ANGLE OF ATTACK, ALPHA, DEG.

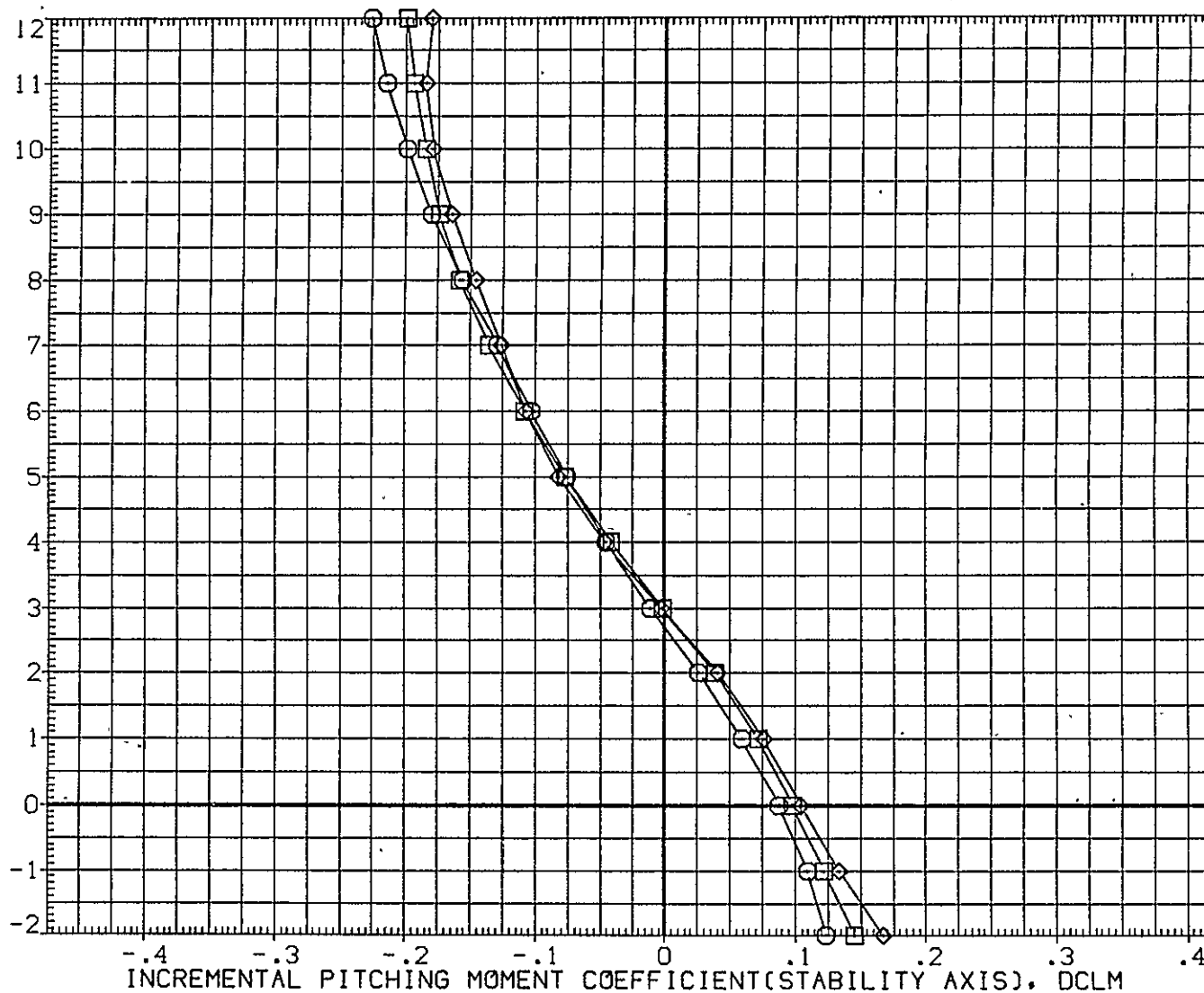


FIG. 30 747+0RB(10 DEG)+SP45,BASIC TAIL, FLAPS 20 LAUNCH(S=+1)

747

CA5 ORB TC5 AT38.1 (PRES. K1 F20 H15.1A V9.1)(YGM075)

SYMBOL
○
□
◇

MACH	PARAMETRIC VALUES			
.499	BETA	.000	STAB	1.000
.599	RUD-U	.000	RUD-L	.000
.700	ELV-1B	.000	ELV-0B	3.000
	S1-2	45.000	S3-4	45.000
	S5-6	45.000	10RB	9.700

REFERENCE INFORMATION

SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN. X0
YMRP	.0000	IN. Y0
ZMRP	375.0000	IN. Z0
SCALE	.0300	

LIFT COEFFICIENT, CL

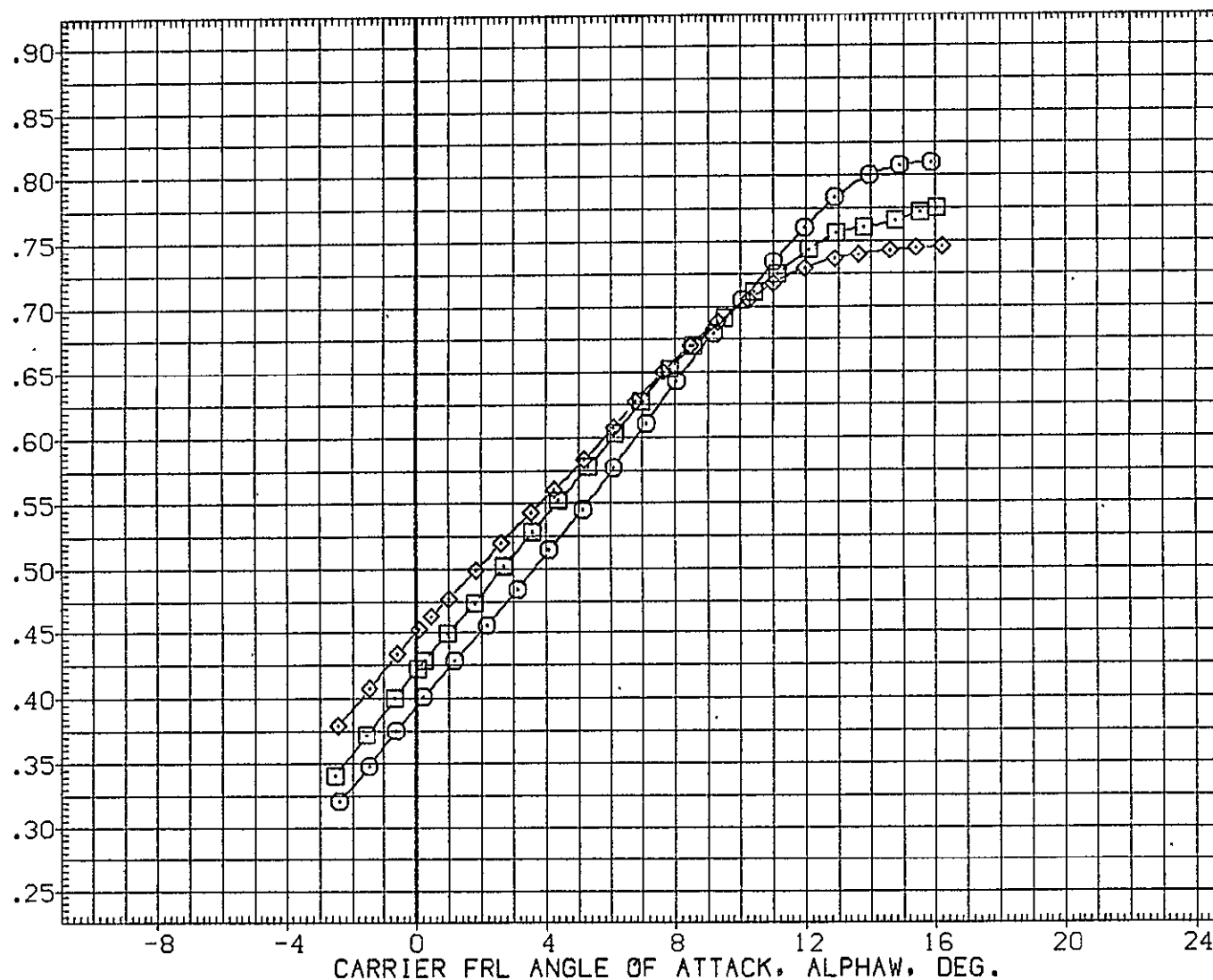


FIG. 31 747+ORB(10 DEG)+SP45,BASIC TAIL, FLAPS 20 LAUNCH(S=+1)

ORB

SYMBOL

○
□
◇

MACH

PARAMETRIC VALUES

.499	BETA	.000	STAB	1.000
.599	RUD-U	.000	RUD-L	.000
.700	ELV-1B	.000	ELV-OB	3.000
	S1-2	45.000	S3-4	45.000
	S5-6	45.000	10RB	9.700

REFERENCE INFORMATION

SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN. X0
YMRP	.0000	IN. Y0
ZMRP	375.0000	IN. Z0
SCALE	.0300	

LIFT COEFFICIENT, CL

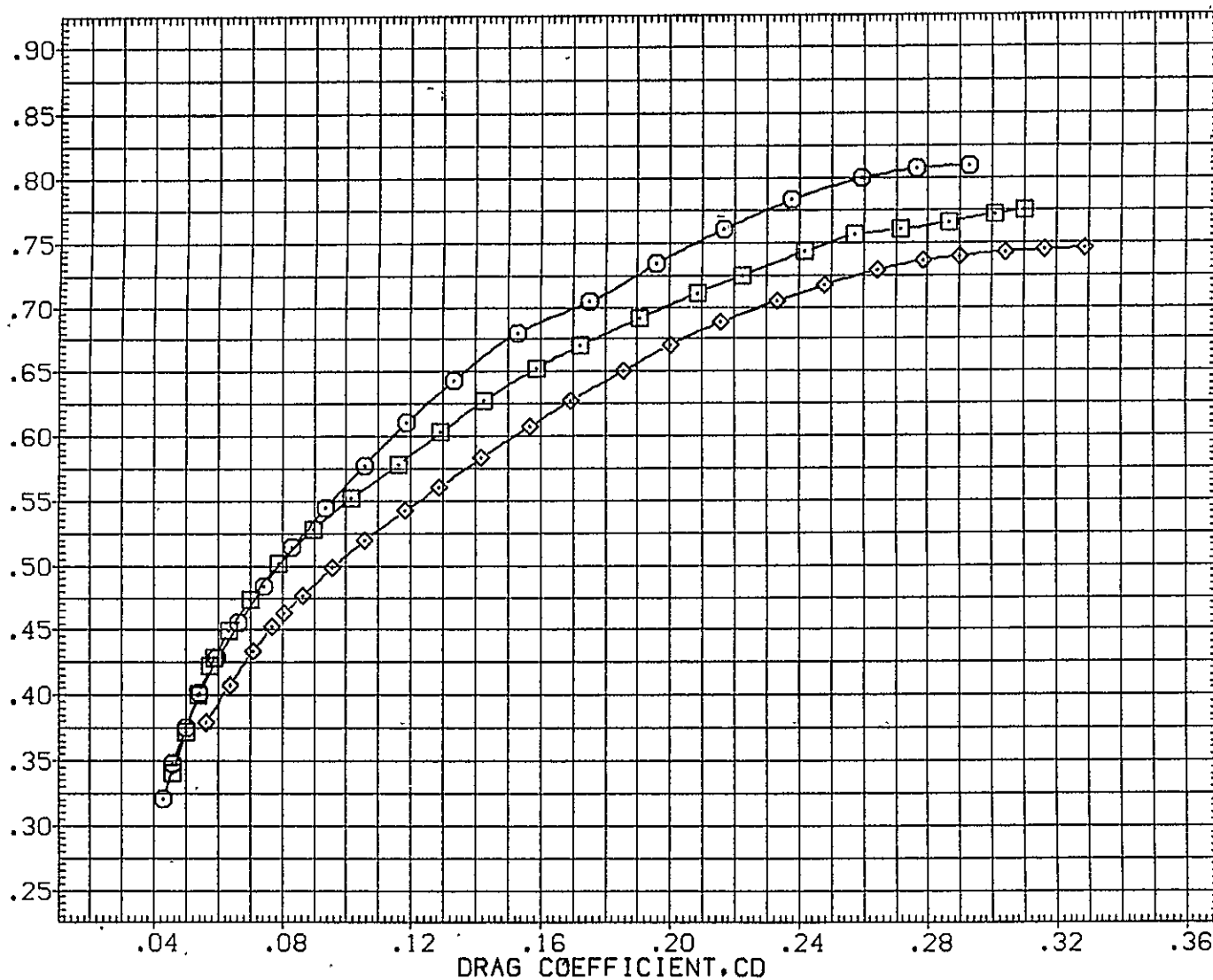


FIG. 31 747+ORB(10 DEG)+SP45,BASIC TAIL, FLAPS 20 LAUNCH(S=+1)

ORB

CA5 0RB TC5 AT38.1 (PRES. K1 F20 H15.1A V9.1)(YGM075)

SYMBOL

○
□
◇

MACH

.499
.599
.700

BETA
RUD-U
ELV-1B
SI-2
S5-6

PARAMETRIC VALUES

.000 STAB 1.000
.000 RUD-L .000
.000 ELV-0B 3.000
45.000 S3-4 45.000
45.000 10RB 9.700

REFERENCE INFORMATION

SREF 2690.0000 SQ.FT.
LREF 474.8100 IN.
BREF 936.6800 IN.
XMRP 1109.0000 IN. X0
YMRP .0000 IN. Y0
ZMRP 375.0000 IN. Z0
SCALE .0300

LIFT COEFFICIENT, CL

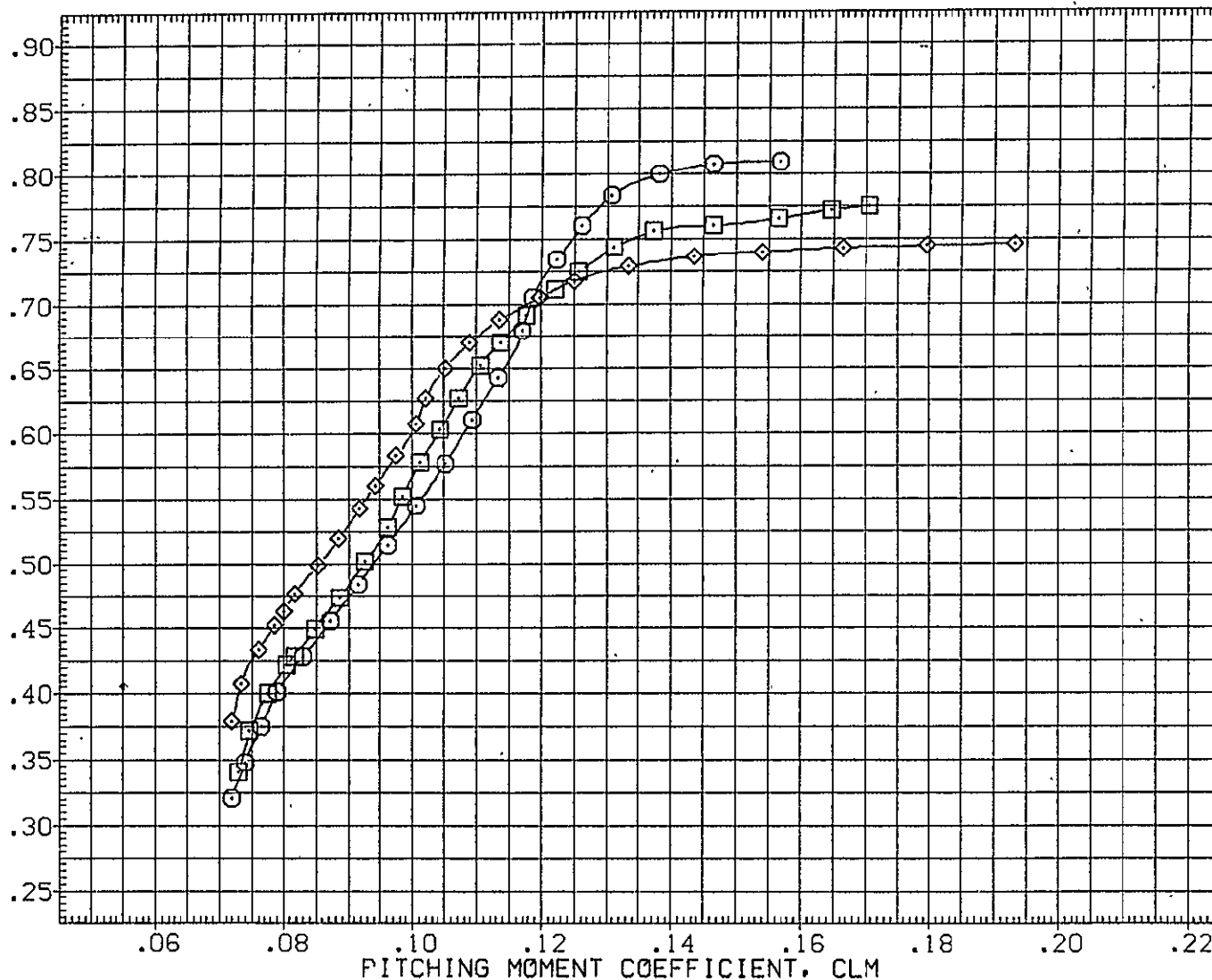


FIG. 31 747+0RB(10 DEG)+SP45,BASIC TAIL, FLAPS 20 LAUNCH(S=+1)

0RB

SYMBOL
○
□
◇

MACH

.499

BETA

.000

STAB

1.000

RUD-U

.000

RUD-L

.000

ELV-1B

.000

ELV-OB

3.000

S1-2

45.000

S3-4

45.000

S5-6

45.000

IORB

9.700

REFERENCE INFORMATION

SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN. X0
YMRP	.0000	IN. Y0
ZMRP	375.0000	IN. Z0
SCALE	.0300	

CARRIER FRL ANGLE OF ATTACK, ALPHA, DEG.

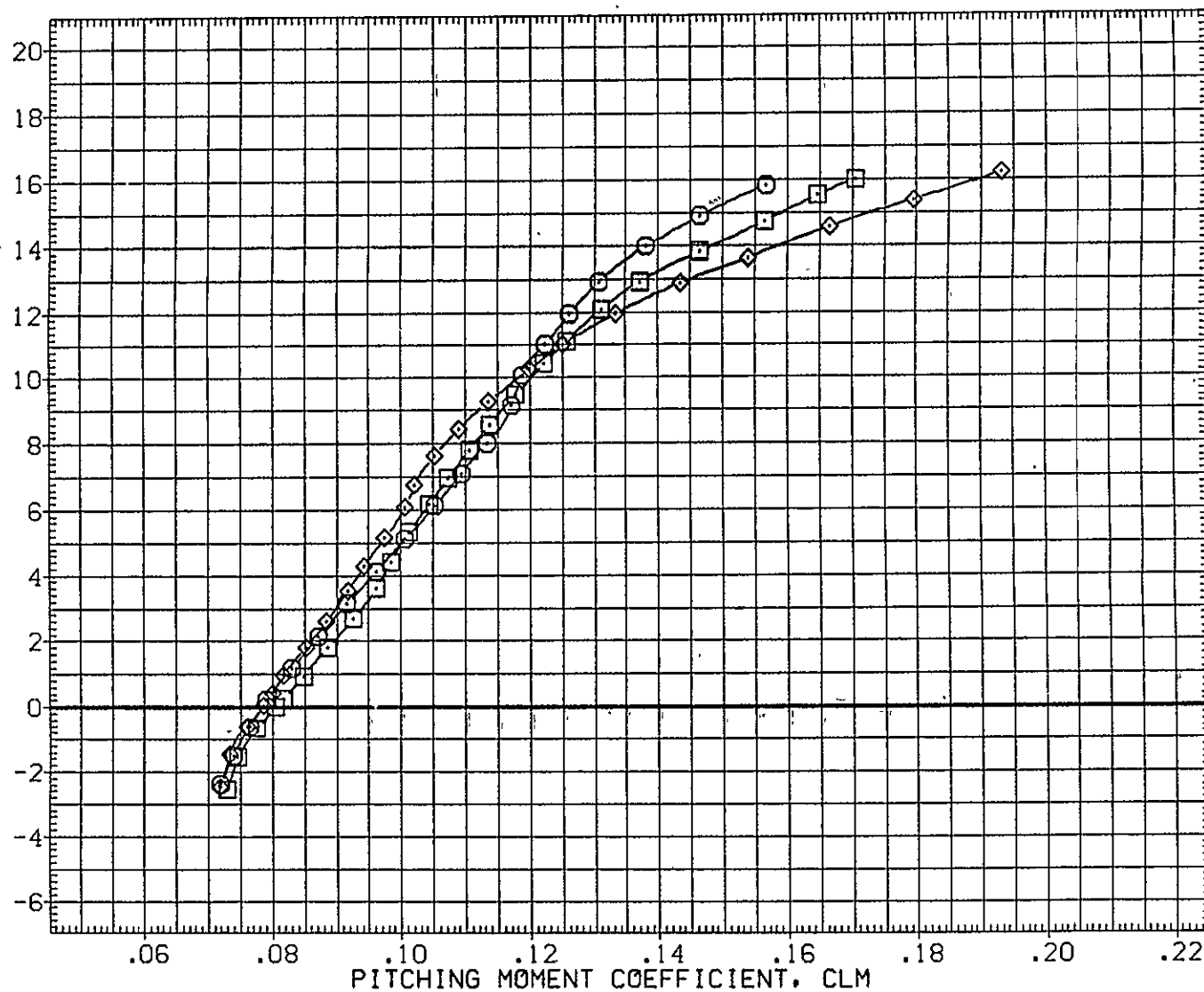


FIG. 31 747+ORB(10 DEG)+SP45,BASIC TAIL, FLAPS 20 LAUNCH(S=+1)

ORB

CA5 K1 F20 V9.1 (PLUS. ORB TC5 AT38.1)(RGM077)

SYMBOL	MACH	BETA	PARAMETRIC VALUES
○	.300	BETA	.000 RUD-U .000
□	.499	RUD-L	.000 S1-2 45.000
◇	.600	S3-4	45.000 S5-6 45.000
△	.700	ICRB	9.700

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XM RP	1339.9100	IN. XC
YM RP	.0000	IN. YC
ZM RP	190.7500	IN. ZC
SCALE	.0300	

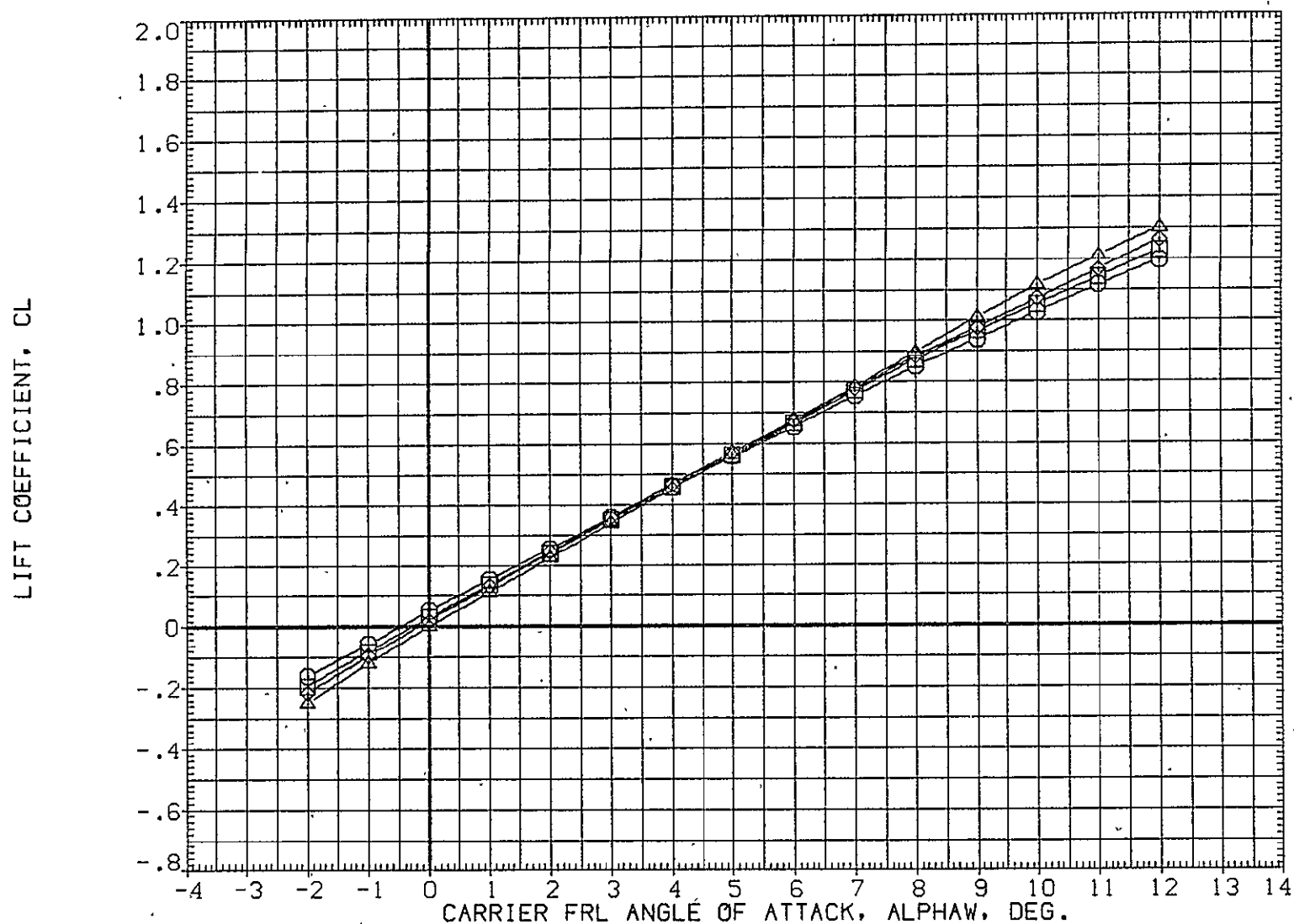


FIG. 32 747+ORB(10 DEG)+SP45,HORIZ OFF, FLAPS 20 LAUNCH

CA5 K1 F20

V9.1 (PLUS. ORB TC5 AT38.1)(RGM077)

SYMBOL

MACH

PARAMETRIC VALUES

○
□
◇
△

.300

BETA

.000

RUD-U

.000

.499

RUD-L

.000

S1-2

45.000

.600

S3-4

45.000

S5-6

45.000

.700

10RB

9.700

REFERENCE INFORMATION

SREF	5500.0000	SQ.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

LIFT COEFFICIENT, CL

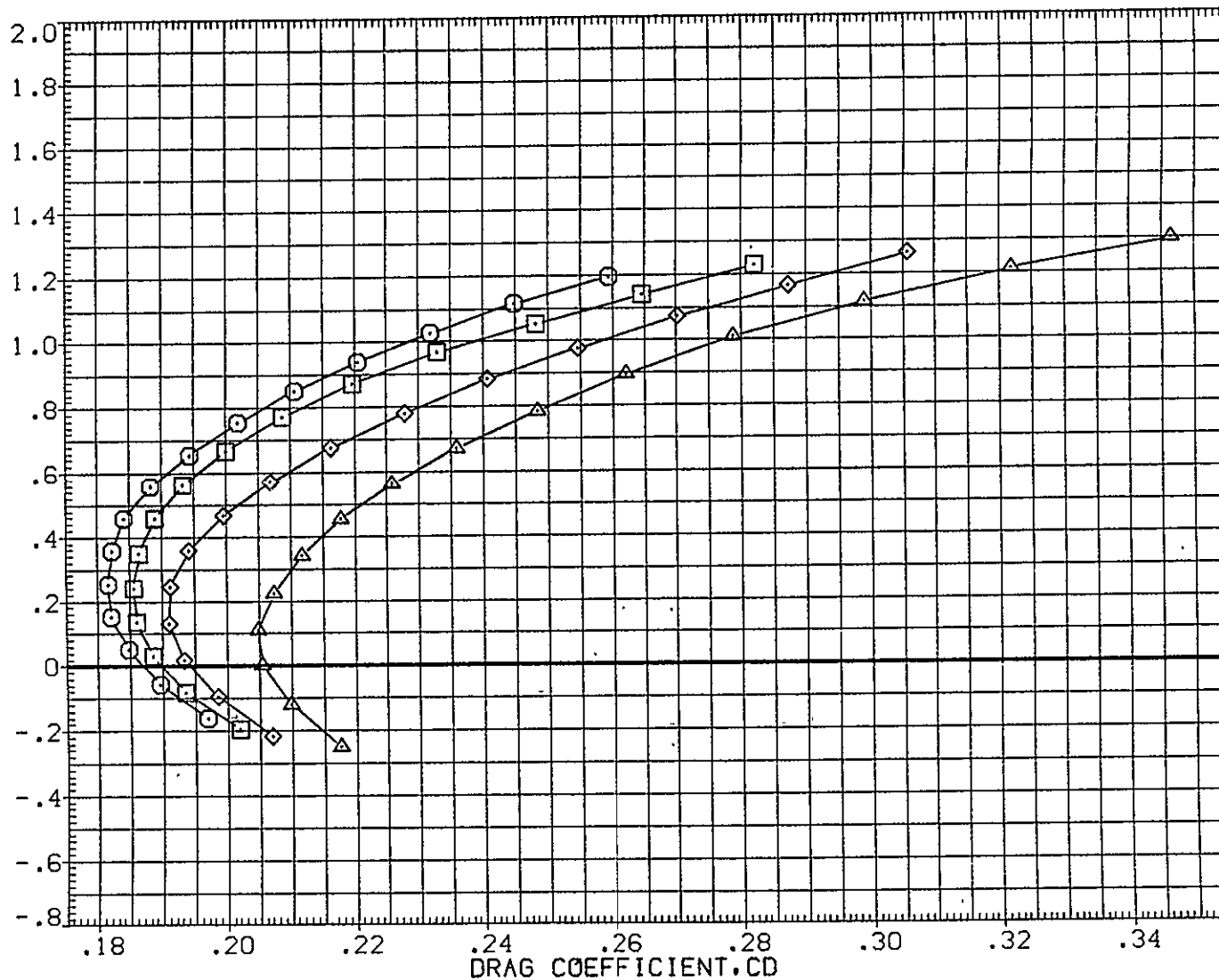


FIG. 32 747+ORB(10 DEG)+SP45,HORIZ OFF, FLAPS 20 LAUNCH

CA5 K1 F20

V9.1 (PLUS. ORB TC5 AT38.1)(RGM077)

SYMBOL	MACH	PARAMETRIC VALUES			
○	.300	BETA	.000	RUD-U	.000
□	.499	RUD-L	.000	S1-2	45.000
◇	.600	S3-4	45.000	S5-6	45.000
△	.700	IORB	9.700		

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

LIFT COEFFICIENT, CL

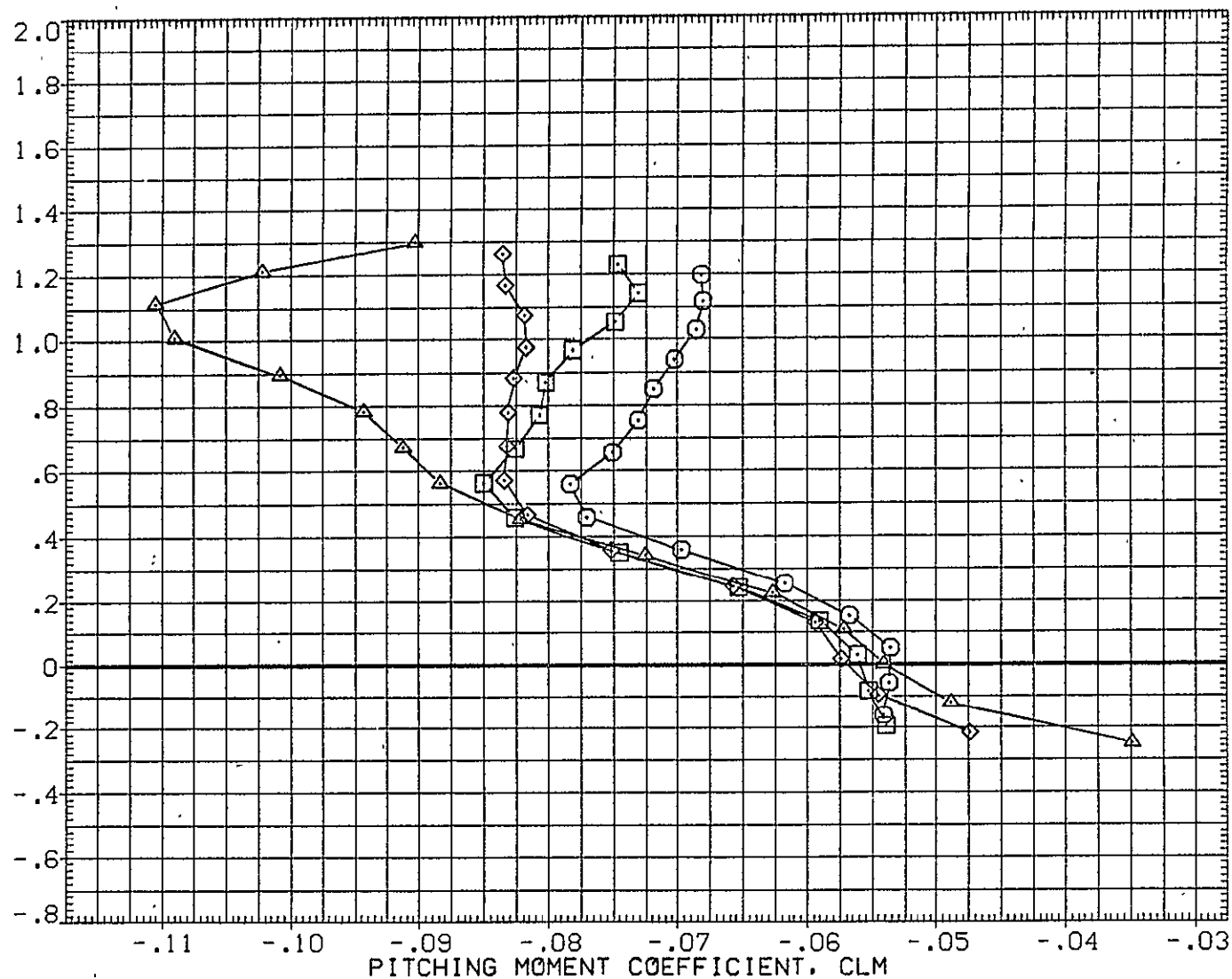


FIG. 32 747+ORB(10 DEG)+SP45,HORIZ OFF, FLAPS 20 LAUNCH

SYMBOL
○
□
◇
△

MACH

BETA
RUD-L
S3-4
10RB

PARAMETRIC VALUES

.000 RUD-U .000
.000 S1-2 45.000
45.000 S5-6 45.000
9.700

REFERENCE INFORMATION

SREF 5500.0000 SQ.FT.
LREF 327.8000 IN.
BREF 2348.0000 IN.
XMRP 1339.9100 IN. XC
YMRP .0000 IN. YC
ZMRP 190.7500 IN. ZC
SCALE .0300

CARRIER FRL ANGLE OF ATTACK, ALPHA, DEG.

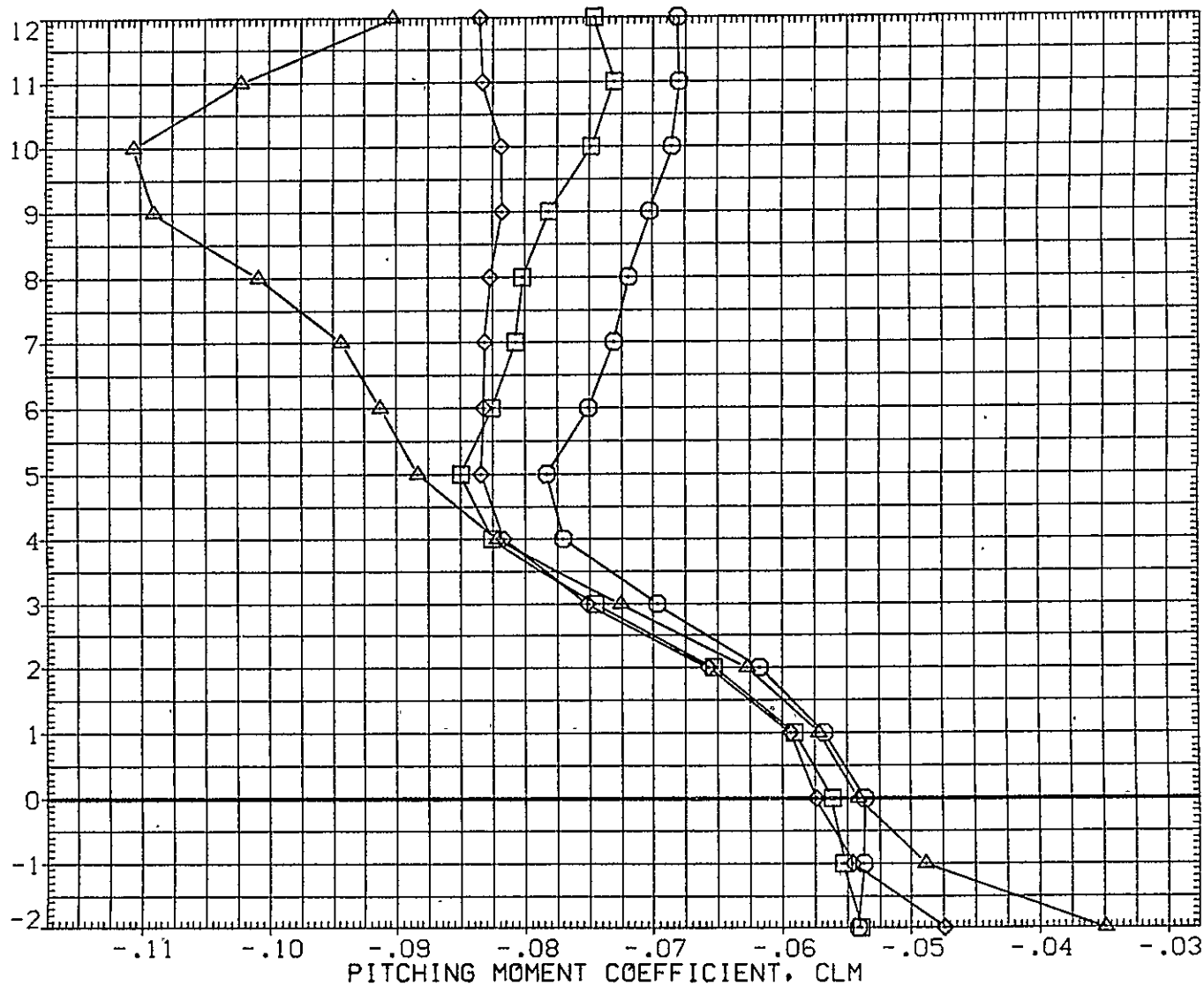


FIG. 32 747+0RB(10 DEG)+SP45,HORIZ OFF, FLAPS 20 LAUNCH

TOTAL

PAGE 128

CA5 K1 F20

V9.1 MINUS ORB TC5 AT38.1 (BGM077)

SYMBOL	MACH	PARAMETRIC VALUES			
○	.300	BETA	.000	RUD-U	.000
□	.499	RUD-L	.000	S1-2	45.000
◇	.600	S3-4	45.000	S5-6	45.000
△	.700	10RB	9.700		

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

INCREMENTAL LIFT FORCE COEFFICIENT(STABILITY AXIS), DCL

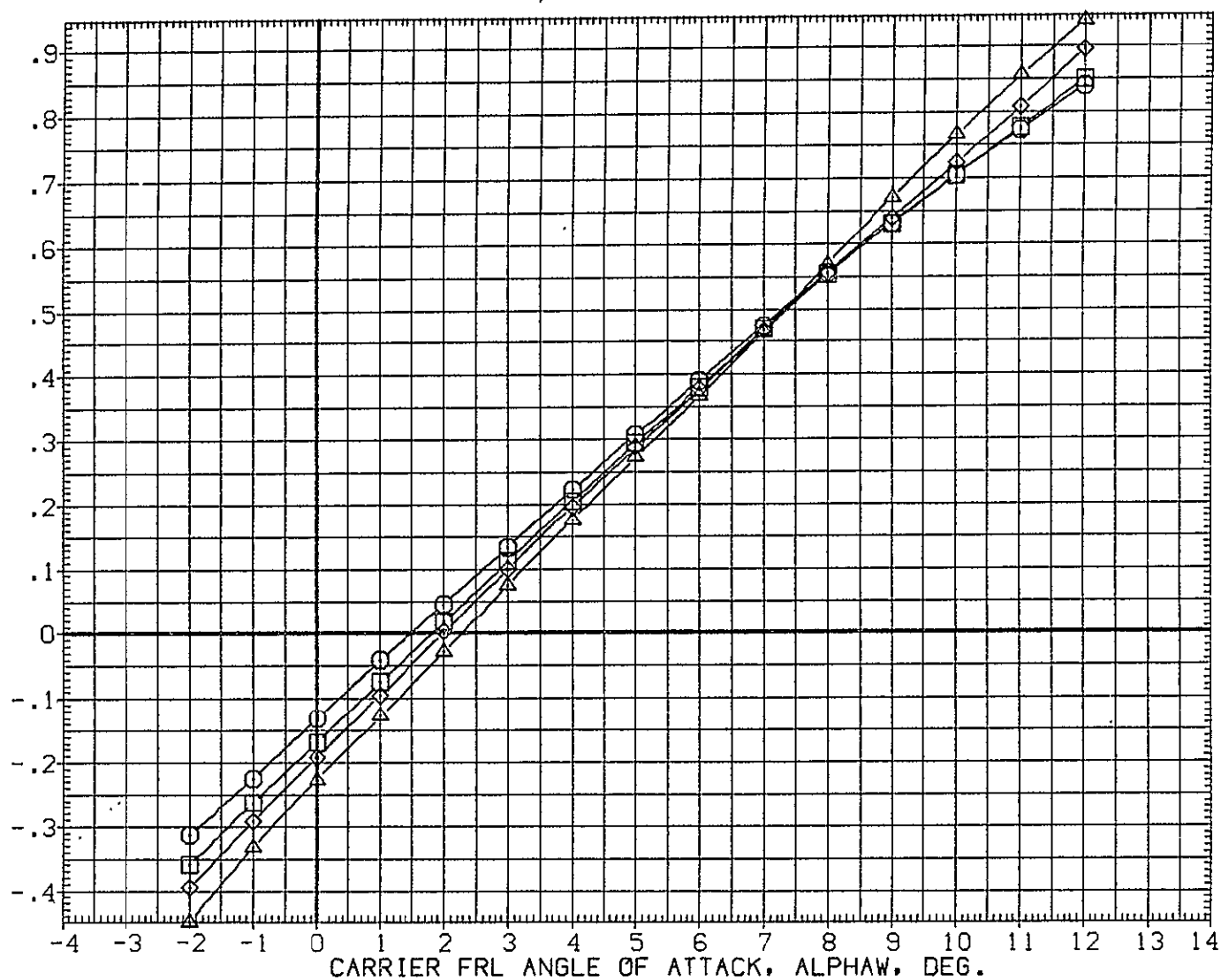


FIG. 33 747+ORB(10 DEG)+SP45,HORIZ OFF, FLAPS 20 LAUNCH

747

SYMBOL

MACH

PARAMETRIC VALUES

REFERENCE INFORMATION

○
□
◇
△

.300	BETA	.000	RUD-U	.000
.499	RUD-L	.000	S1-2	45.000
.600	S3-4	45.000	S5-6	45.000
.700	ICRB	9.700		

SREF	5500.0000	SQ.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

INCREMENTAL LIFT FORCE COEFFICIENT(STABILITY AXIS), DCL

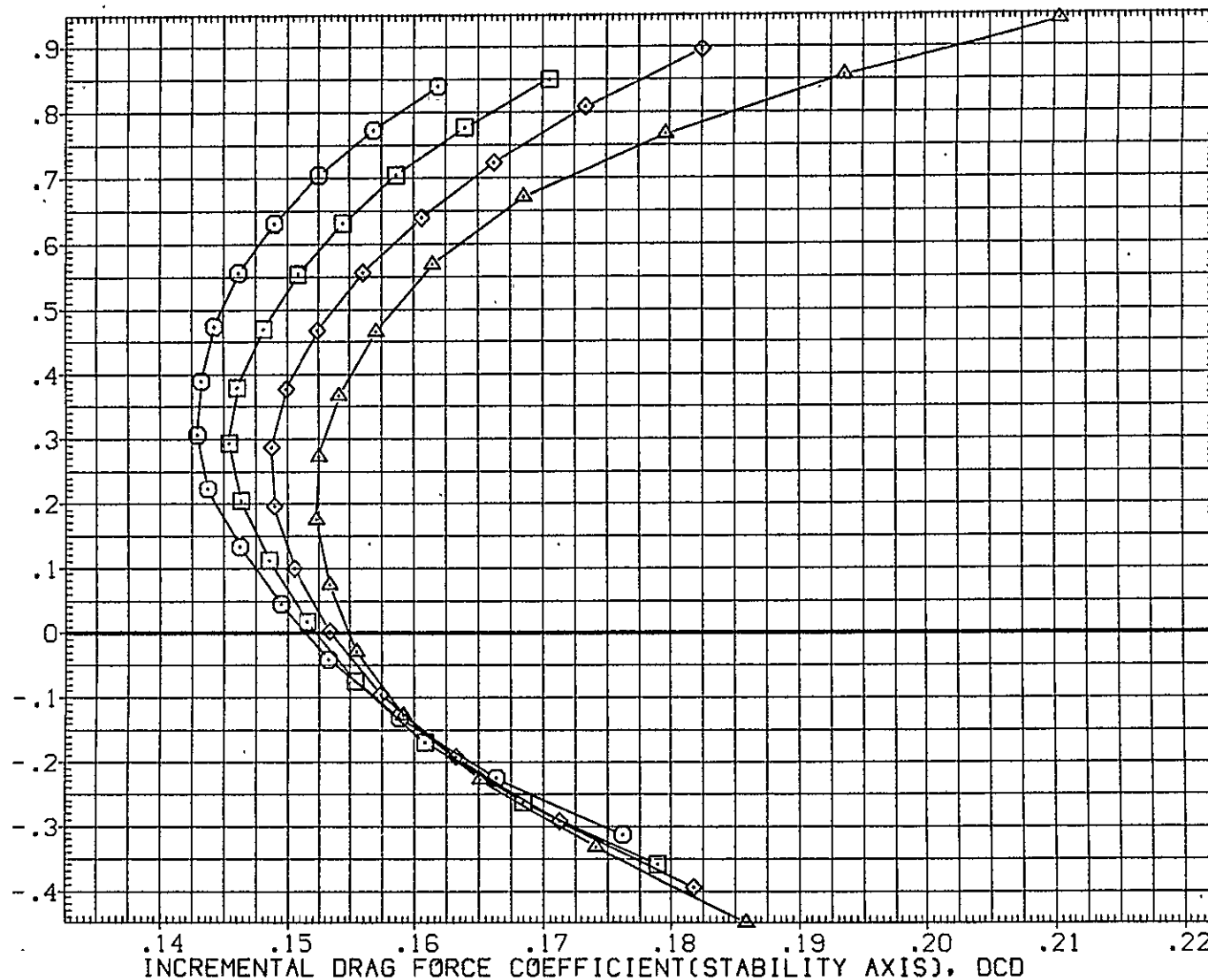


FIG. 33 747+ORB(10 DEG)+SP45,HORIZ OFF, FLAPS 20 LAUNCH

747

CA5 K1 F20

V9.1 MINUS ORB TC5 AT38.1 (BGM077)

SYMBOL	MACH	PARAMETRIC VALUES			
○	.300	BETA	.000	RUD-U	.000
□	.499	RUD-L	.000	S1-2	45.000
◇	.600	S3-4	45.000	S5-6	45.000
△	.700	IORB	9.700		

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

INCREMENTAL LIFT FORCE COEFFICIENT(STABILITY AXIS), DCL

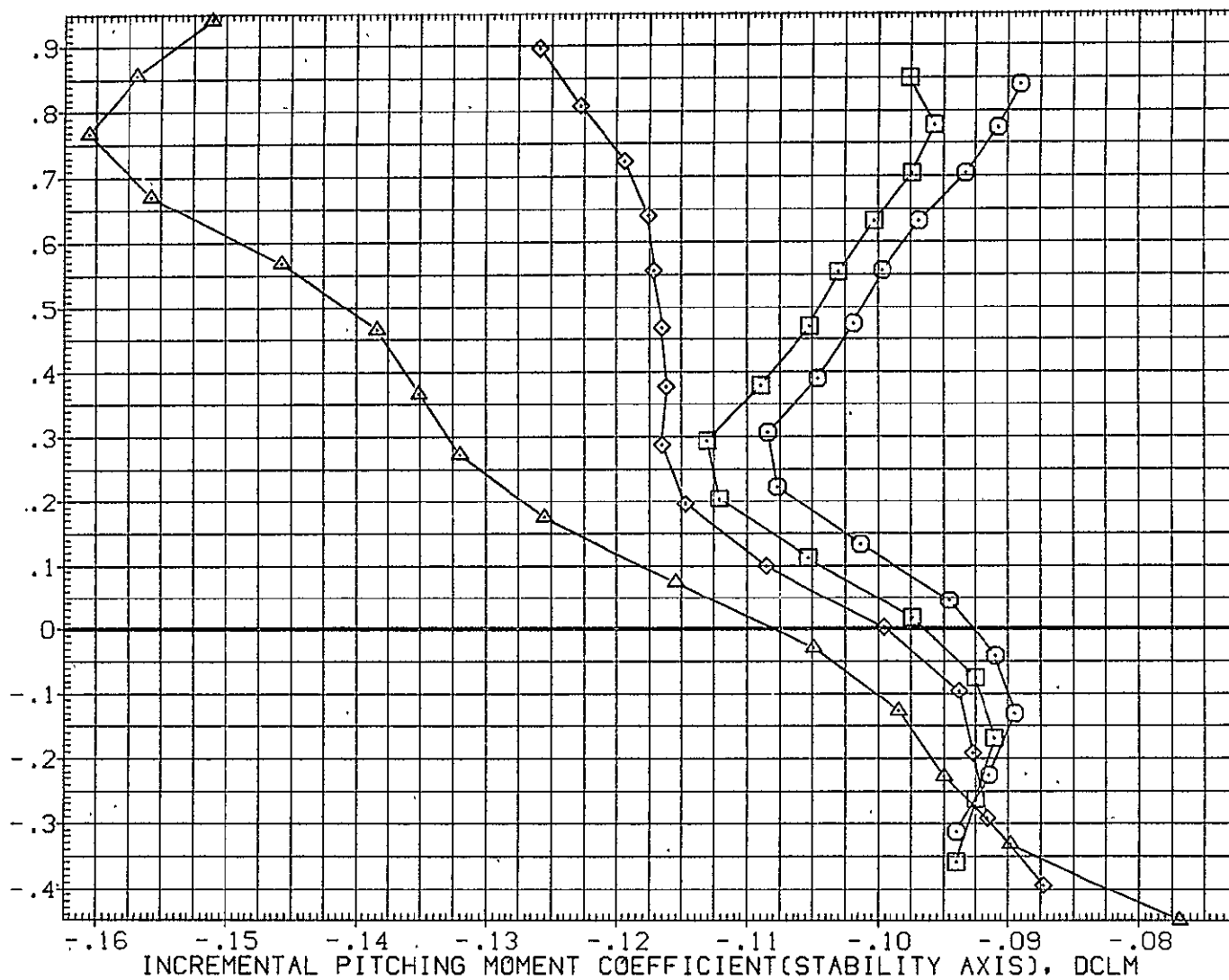


FIG. 33 747+ORB(10 DEG)+SP45,HORIZ OFF, FLAPS 20 LAUNCH

747

SYMBOL	MACH	BETA	PARAMETRIC VALUES	RUD-U	
○	.300		.000		.000
□	.499	RUD-L	.000	S1-2	45,000
◇	.600	S3-4	45,000	S5-6	45,000
△	.700	ORB	9,700		

REFERENCE INFORMATION

SREF	5500.0000	SQ.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

CARRIER FRL ANGLE OF ATTACK, ALPHA, DEG.

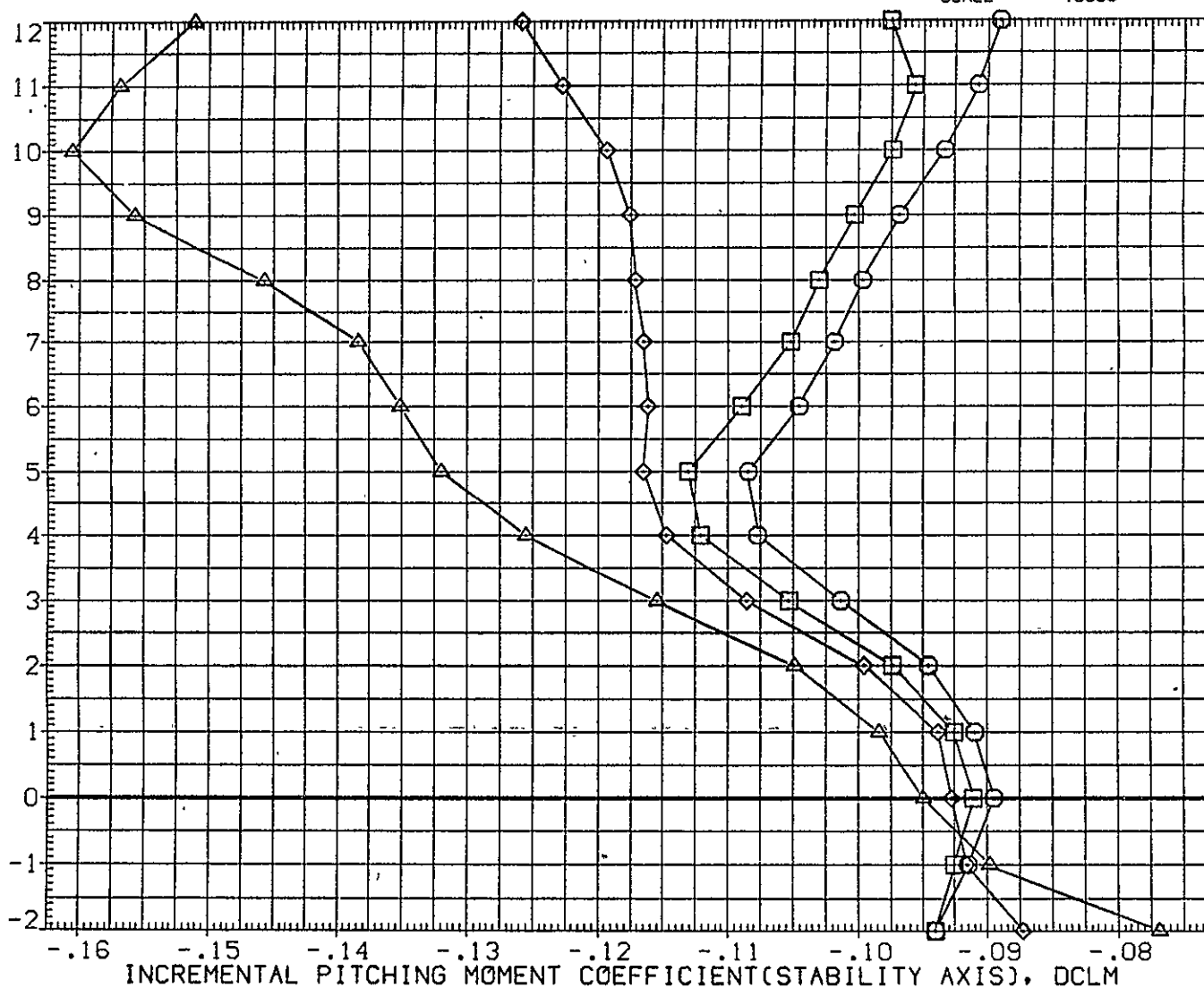


FIG. 33 747+ORB(10 DEG)+SP45, HORIZ OFF, FLAPS 20 LAUNCH

747

CA5 0RB TC5 AT38.1 (PRES. K1 F20

V9.1)(YGM077)

SYMBOL

○
□
◇
△

MACH

.300
.499
.600
.700BETA
RUD-L
S3-4
10RB

PARAMETRIC VALUES

.000 RUD-U .000
.000 S1-2 45.000
45.000 S5-6 45.000
9.700

REFERENCE INFORMATION

SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN. X0
YMRP	.0000	IN. Y0
ZMRP	375.0000	IN. Z0
SCALE	.0300	

LIFT COEFFICIENT, CL

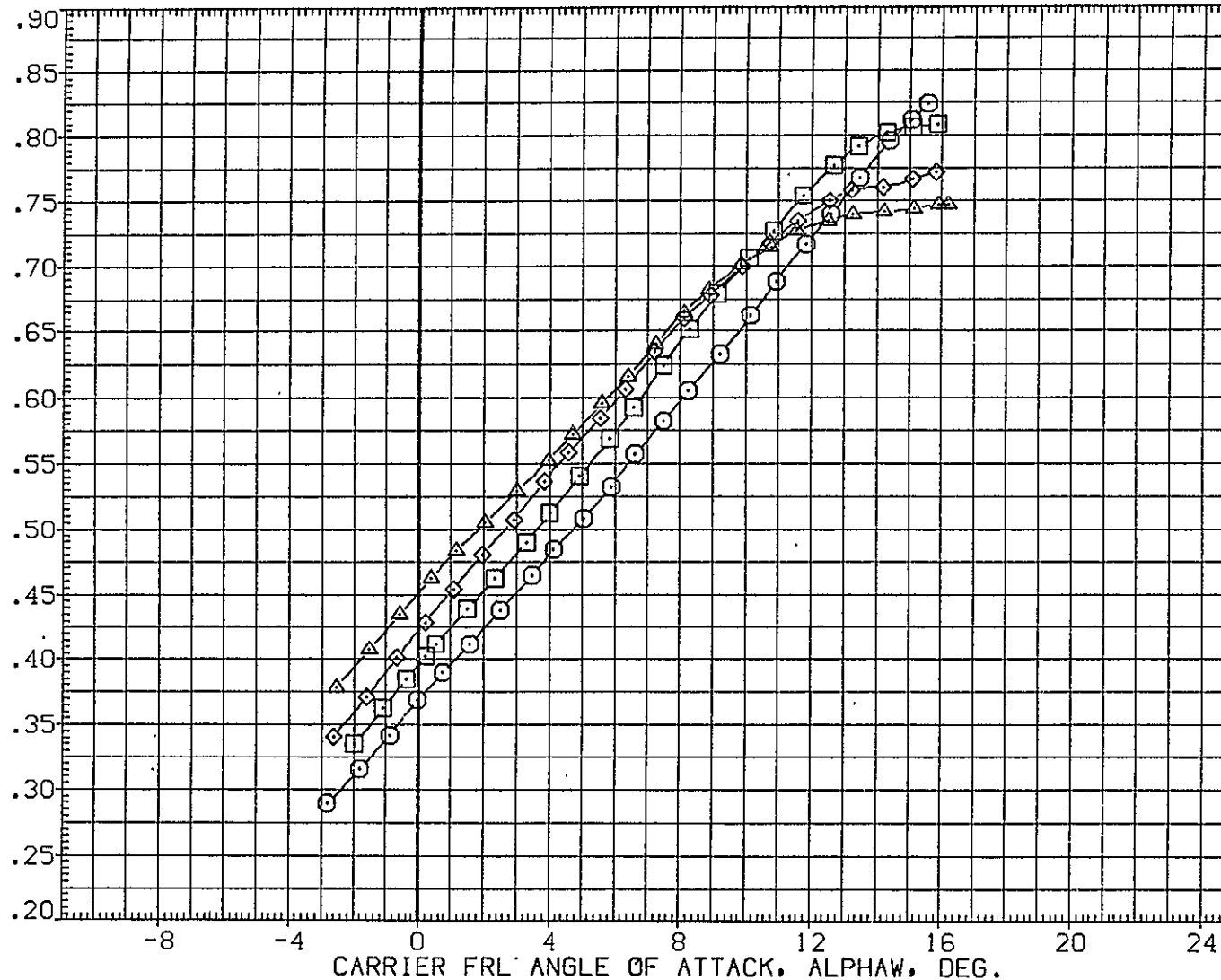


FIG. 34 747+0RB(10 DEG)+SP45,HORIZ OFF, FLAPS 20 LAUNCH

0RB

SYMBOL	MACH	PARAMETRIC VALUES			
○	.300	BETA	.000	RUD-U	.000
□	.499	RUD-L	.000	S1-2	45.000
◇	.600	S3-4	45.000	S5-6	45.000
△	.700	10RB	9.700		

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN. X0
YMRP	.0000	IN. Y0
ZMRP	375.0000	IN. Z0
SCALE	.0300	

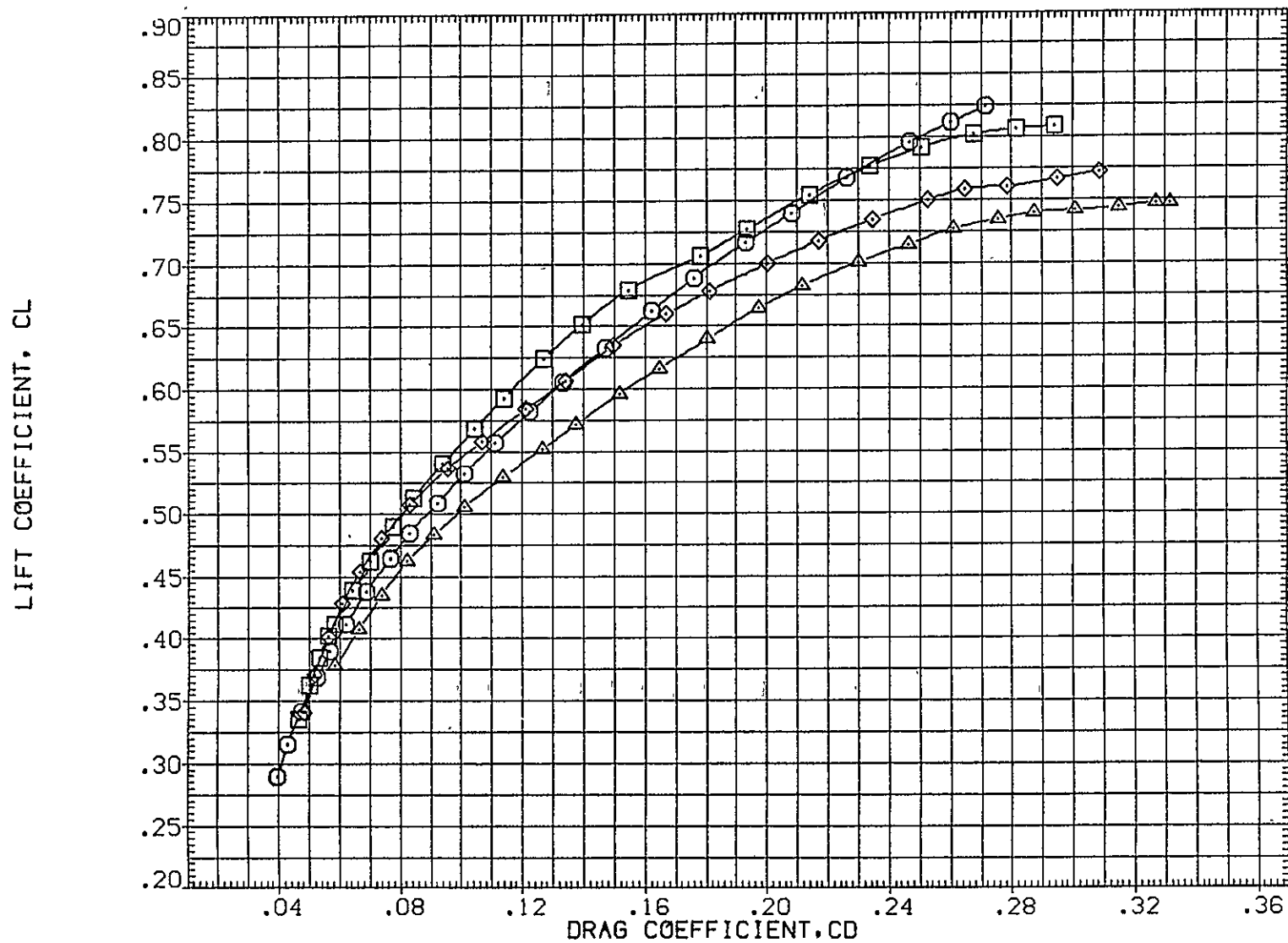


FIG. 34 747+0RB(10 DEG)+SP45,HORIZ OFF, FLAPS 20 LAUNCH

0RB

. CA5 ORB TC5 AT38.1 (PRES. K1 F20

V9.1)(YGM077)

SYMBOL	MACH	PARAMETRIC VALUES			
○	.300	BETA	.000	RUD-U	.000
□	.499	RUD-L	.000	S1-2	45.000
◇	.600	S3-4	45.000	S5-6	45.000
△	.700	10RB	9.700		

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XM RP	1109.0000	IN. X0
YM RP	.0000	IN. Y0
ZM RP	375.0000	IN. Z0
SCALE	.0300	

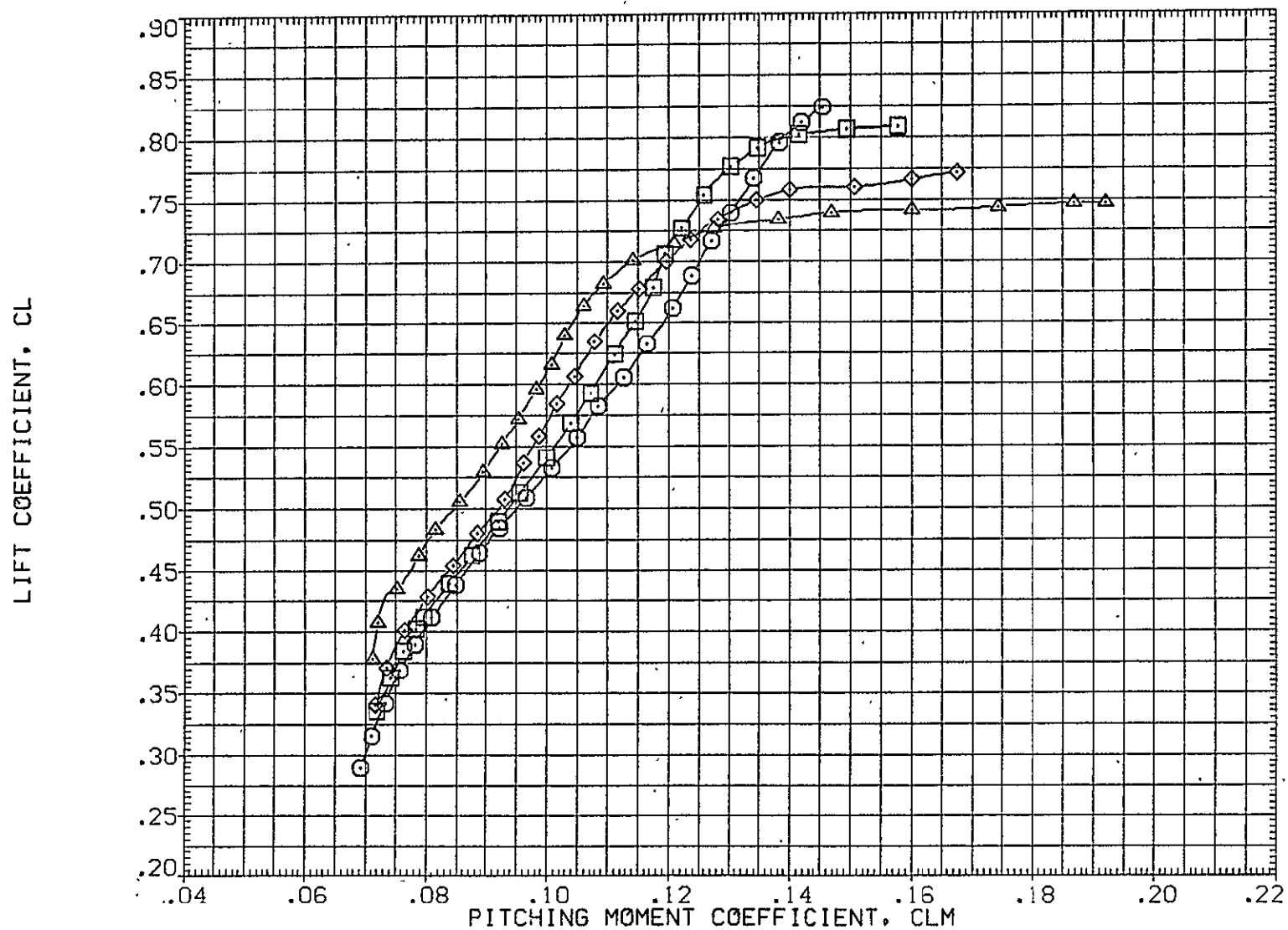


FIG. 34 747+ORB(10 DEG)+SP45, HORIZ OFF, FLAPS 20 LAUNCH

ORB

SYMBOL	MACH	BETA	PARAMETRIC VALUES	RUD-U	
○	.300		.000	.000	
□	.499	RUD-L	.000	S1-2	45.000
◇	.600	S3-4	45.000	S5-6	45.000
△	.700	10RB	9.700		

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN. X0
YMRP	.0000	IN. Y0
ZMRP	375.0000	IN. Z0
SCALE	.0300	

CARRIER FRL ANGLE OF ATTACK, ALPHA, DEG.

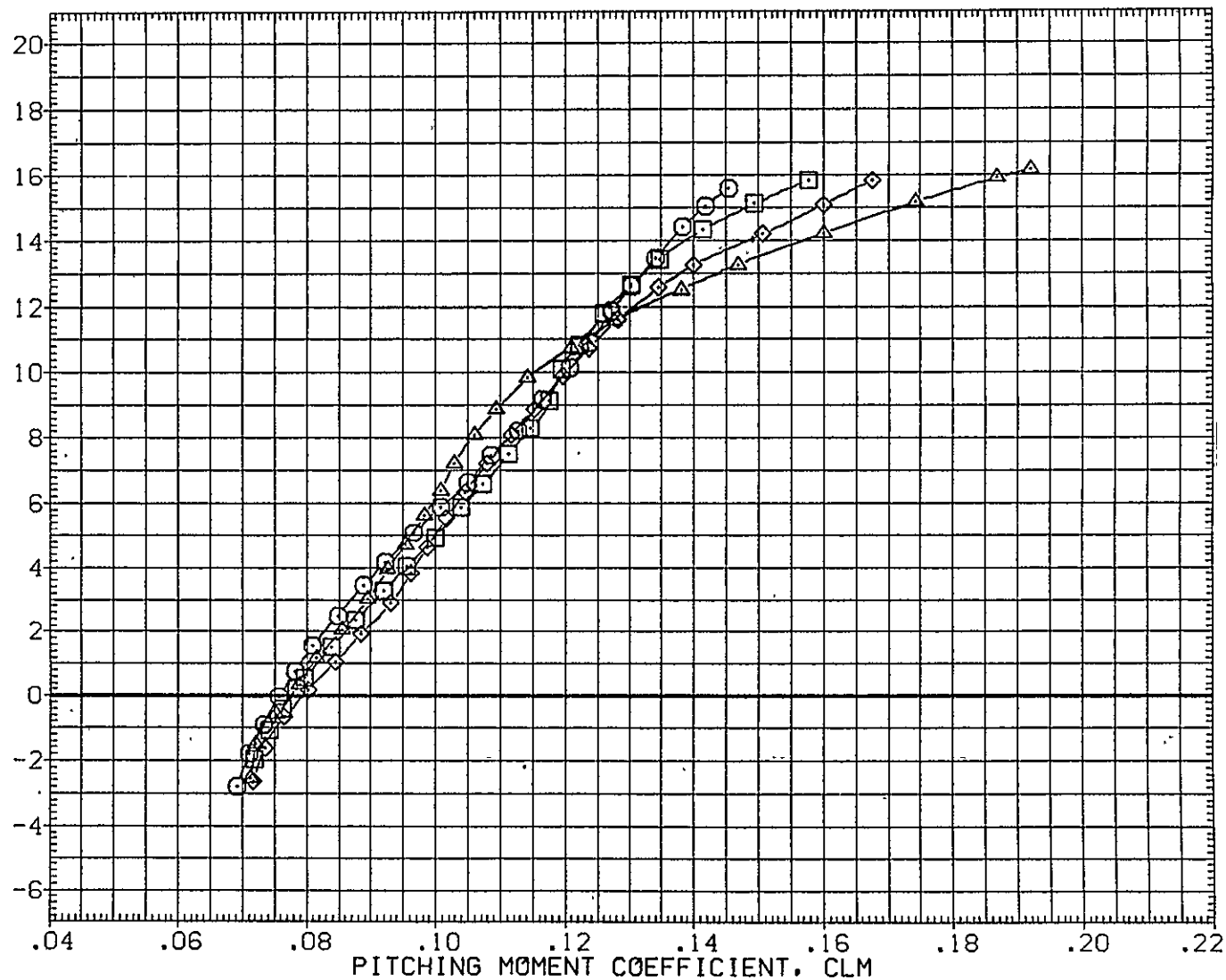


FIG. 34 747+ORB(10 DEG)+SP45,HORIZ OFF, FLAPS 20 LAUNCH

ORB

CA5 K1 F20 H15.6 V9.1 (PLUS. ORB TC5 AT38.2)(RGM080)

SYMBOL	MACH	PARAMETRIC VALUES				REFERENCE INFORMATION		
○	.500	BETA	.000	STAB	1.000	SREF	5500.0000	SQ.FT.
□	.600	RUD-U	.000	RUD-L	.000	LREF	327.8000	IN.
◇	.700	ELV-1B	.000	ELV-0B	3.000	BREF	2348.0000	IN.
		S1-2	45.000	S3-4	45.000	XMRP	1339.9100	IN. XC
		S5-6	45.000	10RB	7.850	YMRP	.0000	IN. YC
						ZMRP	190.7500	IN. ZC
						SCALE	.0300	

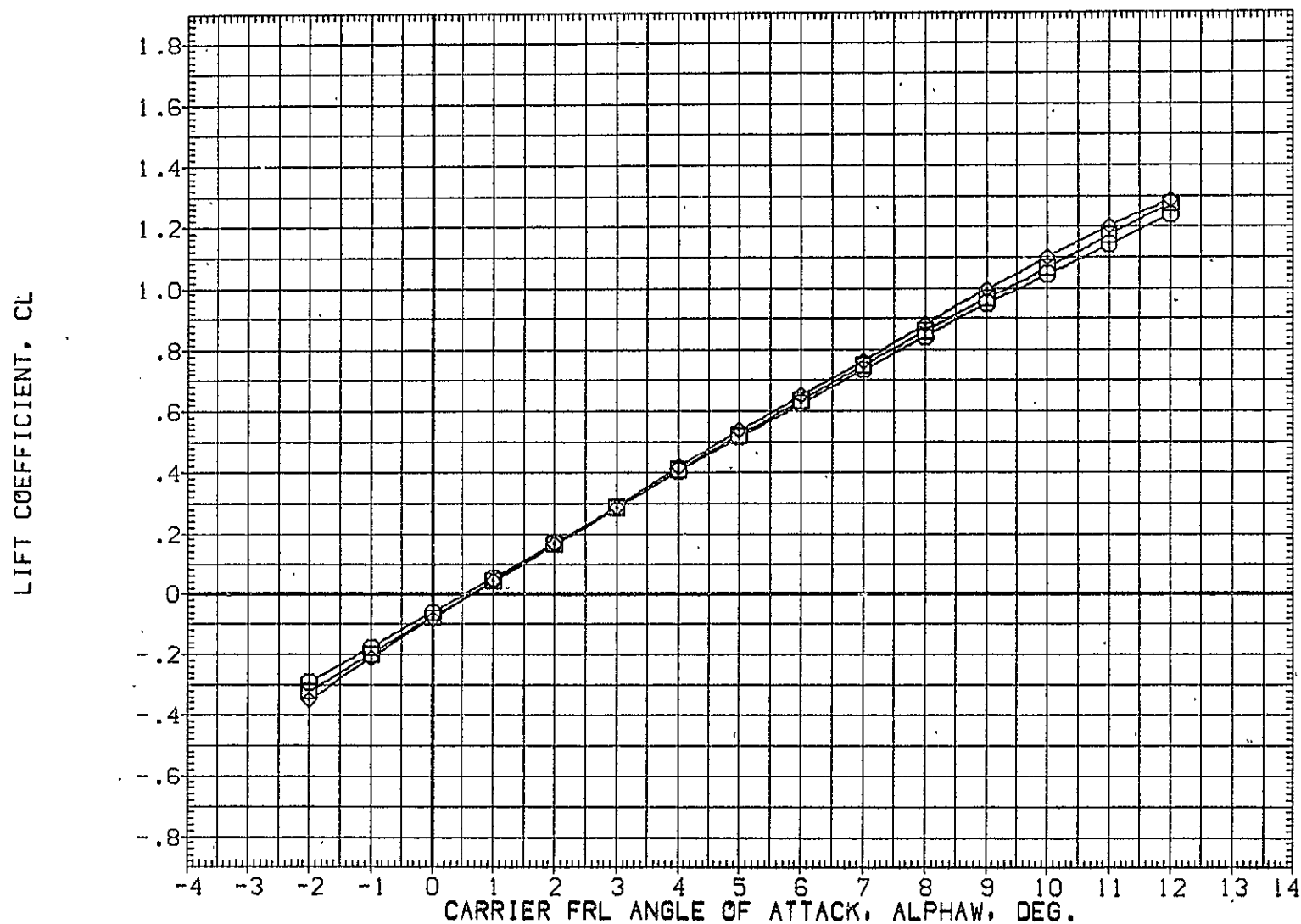


FIG. 35 747+ORB(8 DEG)+TIP FINS+SP45, FLAPS UP LAUNCH(S=+1)

SYMBOL	MACH	PARAMETRIC VALUES				REFERENCE INFORMATION		
○	.500	BETA	.000	STAB	1.000	SREF	5500.0000	SQ.FT.
□	.600	RUD-U	.000	RUD-L	.000	LREF	327.8000	IN.
◇	.700	ELV-IB	.000	ELV-OB	3.000	BREF	2348.0000	IN.
		S1-2	45.000	S3-4	45.000	XMRP	1339.9100	IN. XC
		S5-6	45.000	10RB	7.850	YMRP	.0000	IN. YC
						ZMRP	190.7500	IN. ZC
						SCALE	.0300	

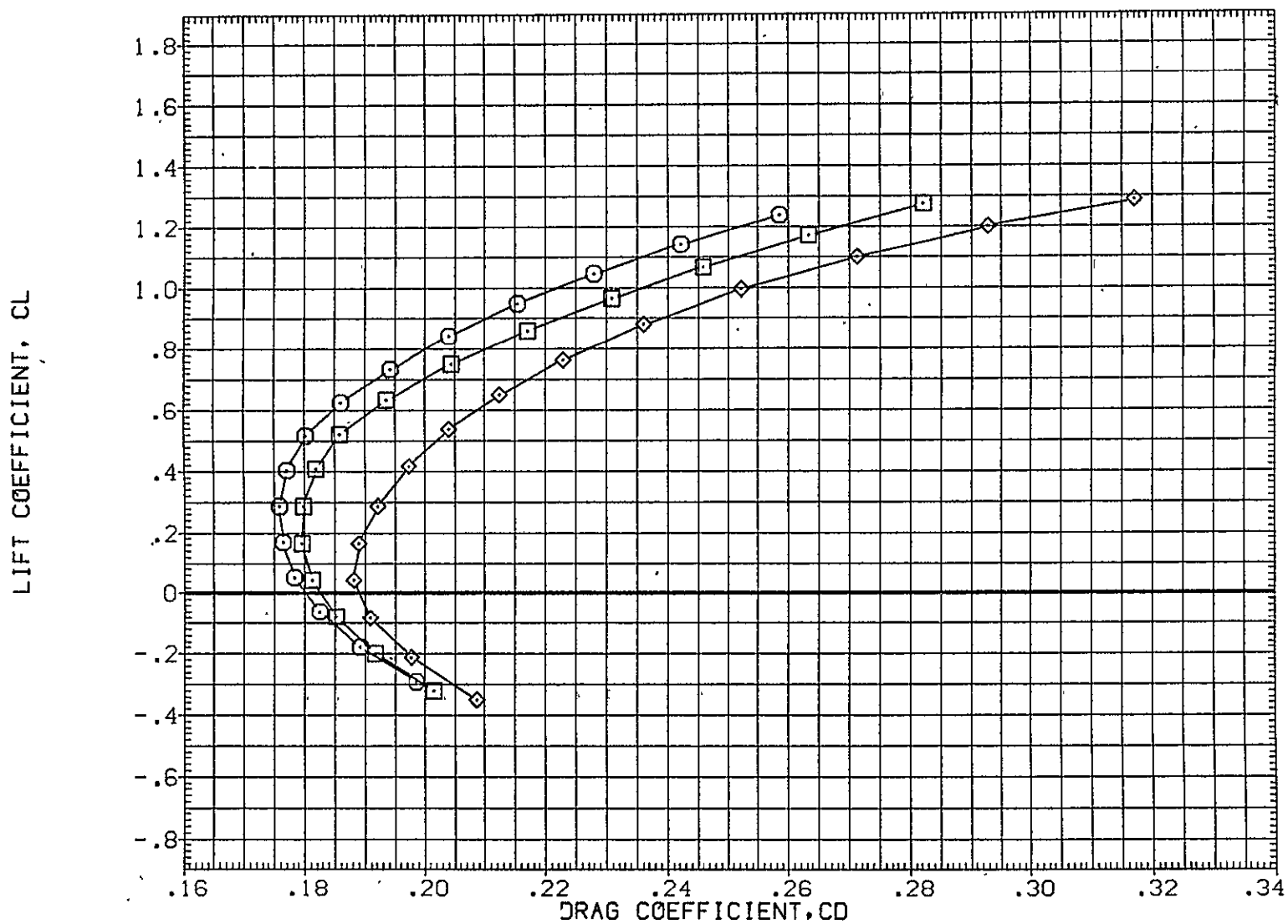


FIG. 35 747+0RB(8 DEG)+TIP FINS+SP45, FLAPS UP LAUNCH(S=+1)

TOTAL

PAGE

138

CA5 K1 F20 H15.6 V9.1 (PLUS. ORB TC5 AT38.2)(RGM080)

SYMBOL	MACH	PARAMETRIC VALUES				REFERENCE INFORMATION		
○	.500	BETA	.000	STAB	1.000	SREF	5500.0000	SQ.FT.
□	.600	RUD-U	.000	RUD-L	.000	LREF	327.8000	IN.
◇	.700	ELV-IB	.000	ELV-OB	3.000	BREF	2348.0000	IN.
		S1-2	45.000	S3-4	45.000	XMRP	1339.9100	IN. XC
		S5-6	45.000	IORB	7.850	YMRP	.0000	IN. YC
						ZMRP	190.7500	IN. ZC
						SCALE	.0300	

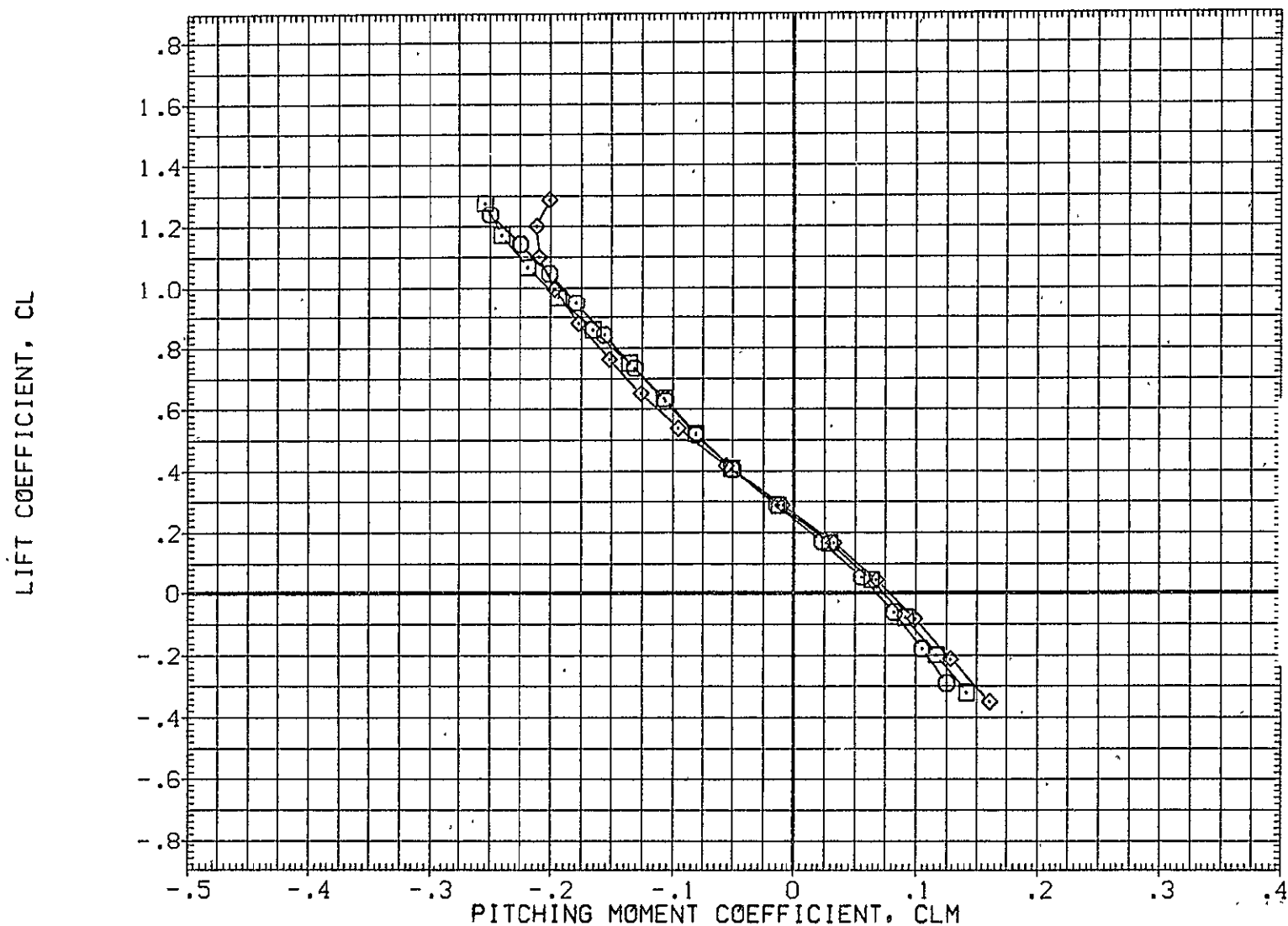


FIG. 35 747+ORB(8 DEG)+TIP FINS+SP45, FLAPS UP LAUNCH(S=+1)

SYMBOL

○
□
◇

MACH

.500
.600
.700

PARAMETRIC VALUES

BETA	.000	STAB	1.000
RUD-U	.000	RUD-L	.000
ELV-1B	.000	ELV-0B	3.000
S1-2	45.000	S3-4	45.000
S5-6	45.000	10RB	7.850

REFERENCE INFORMATION

SREF	5500.0000	SQ.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

CARRIER FRL ANGLE OF ATTACK, ALPHA, DEG.

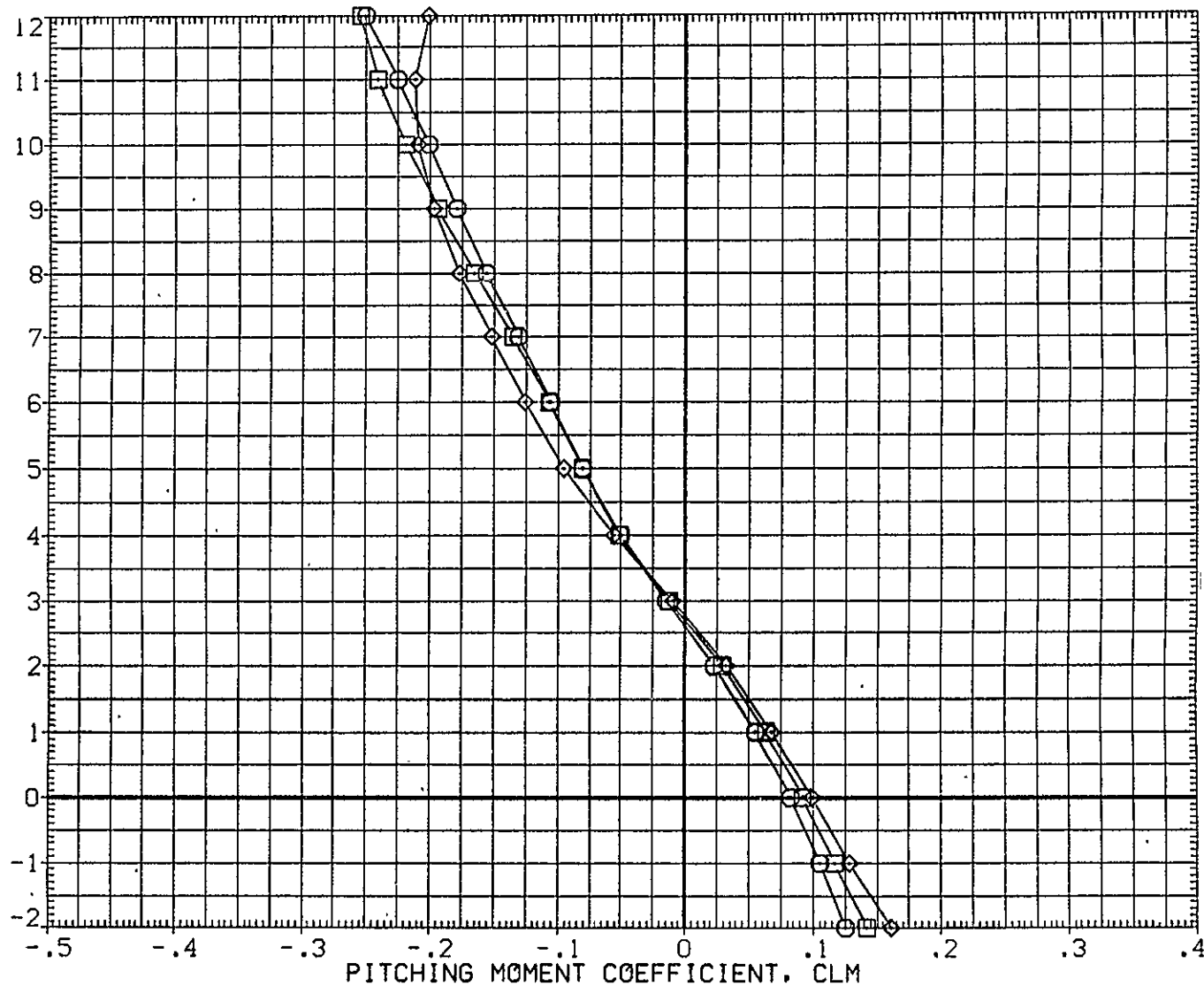


FIG. 35 747+0RB(8 DEG)+TIP FINS+SP45, FLAPS UP LAUNCH(S=+1)

TOTAL

PAGE 140

CA5 K1 F20 H15.6 V9.1 MINUS 0RB TC5 AT38.2 (BGM080)

SYMBOL	MACH	PARAMETRIC VALUES				REFERENCE INFORMATION		
○	.500	BETA	.000	STAB	1.000	SREF	5500.0000	50.FT.
□	.600	RUD-U	.000	RUD-L	.000	LREF	327.8000	IN.
◇	.700	ELV-IB	.000	ELV-OB	3.000	BREF	2348.0000	IN.
		S1-2	45.000	S3-4	45.000	XMRP	1339.9100	IN. XC
		S5-6	45.000	10RB	7.850	YMRP	.0000	IN. YC
						ZMRP	190.7500	IN. ZC
						SCALE	.0300	

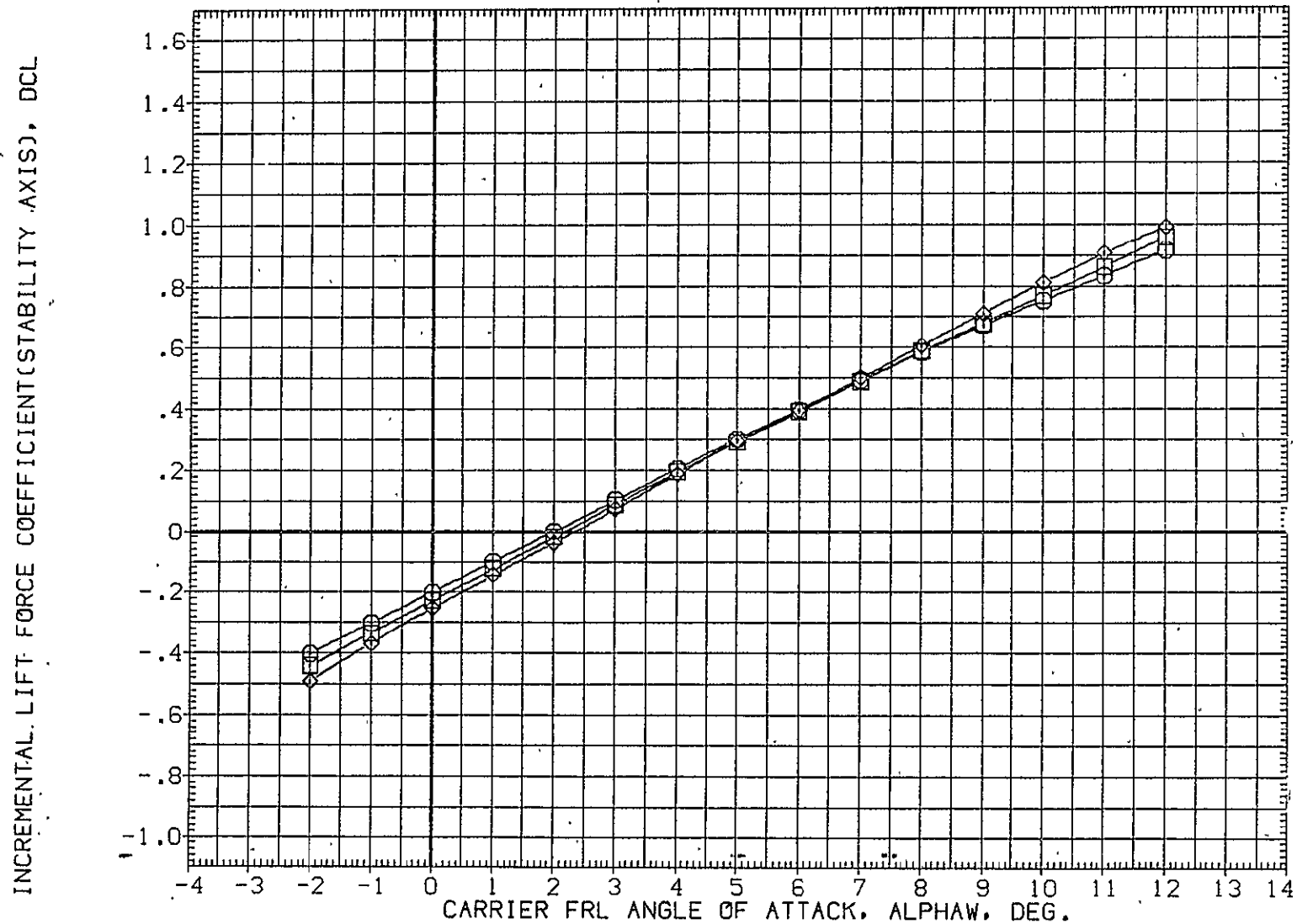


FIG. 36 747+0RB(8 DEG)+TIP FINS+SP45, FLAPS UP LAUNCH(S=+1)

SYMBOL

○
□
◇

MACH

BETA
RUD-U
ELV-IB
SI-2
SS-6

PARAMETRIC VALUES

.000 STAB 1.000
.000 RUD-L .000
.000 ELV-OB 3.000
45.000 S3-4 45.000
45.000 IORB 7.850

REFERENCE INFORMATION

SREF 5500.0000 SQ.FT.
LREF 327.8000 IN.
BREF 2348.0000 IN.
XMRP 1339.9100 IN. XC
YMRP .0000 IN. YC
ZMRP 190.7500 IN. ZC
SCALE .0300

INCREMENTAL LIFT FORCE COEFFICIENT(STABILITY AXIS), DCL

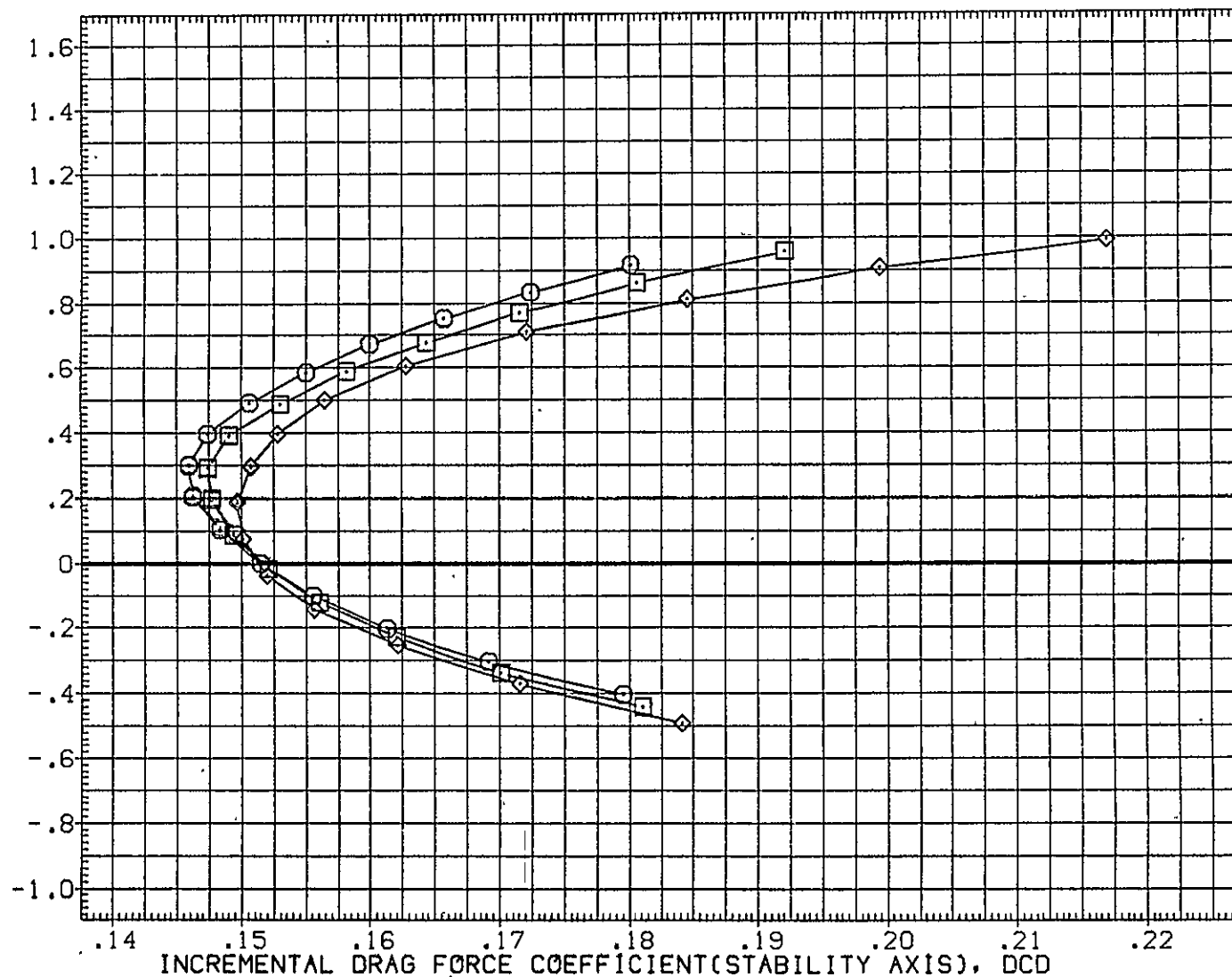


FIG. 36 747+ORB(8 DEG)+TIP FINS+SP45, FLAPS UP LAUNCH(S=+1)

747

PAGE 142

CA5 K1 F20 H15.6 V9.1 MINUS ORB TC5 AT38.2 (BGM080)									
SYMBOL	MACH	PARAMETRIC VALUES				REFERENCE INFORMATION			
	.500	BETA	.000	STAB	1.000	SREF	5500.0000	SQ.FT.	
	.600	RUD-U	.000	RUD-L	.000	LREF	327.8000	IN.	
	.700	ELV-IB	.000	ELV-OB	3.000	BREF	2348.0000	IN.	
		S1-2	45.000	S3-4	45.000	XMRP	1339.9100	IN. XC	
		S5-6	45.000	IORB	7.850	YMRP	.0000	IN. YC	
						ZMRP	190.7500	IN. ZC	
						SCALE	.0300		

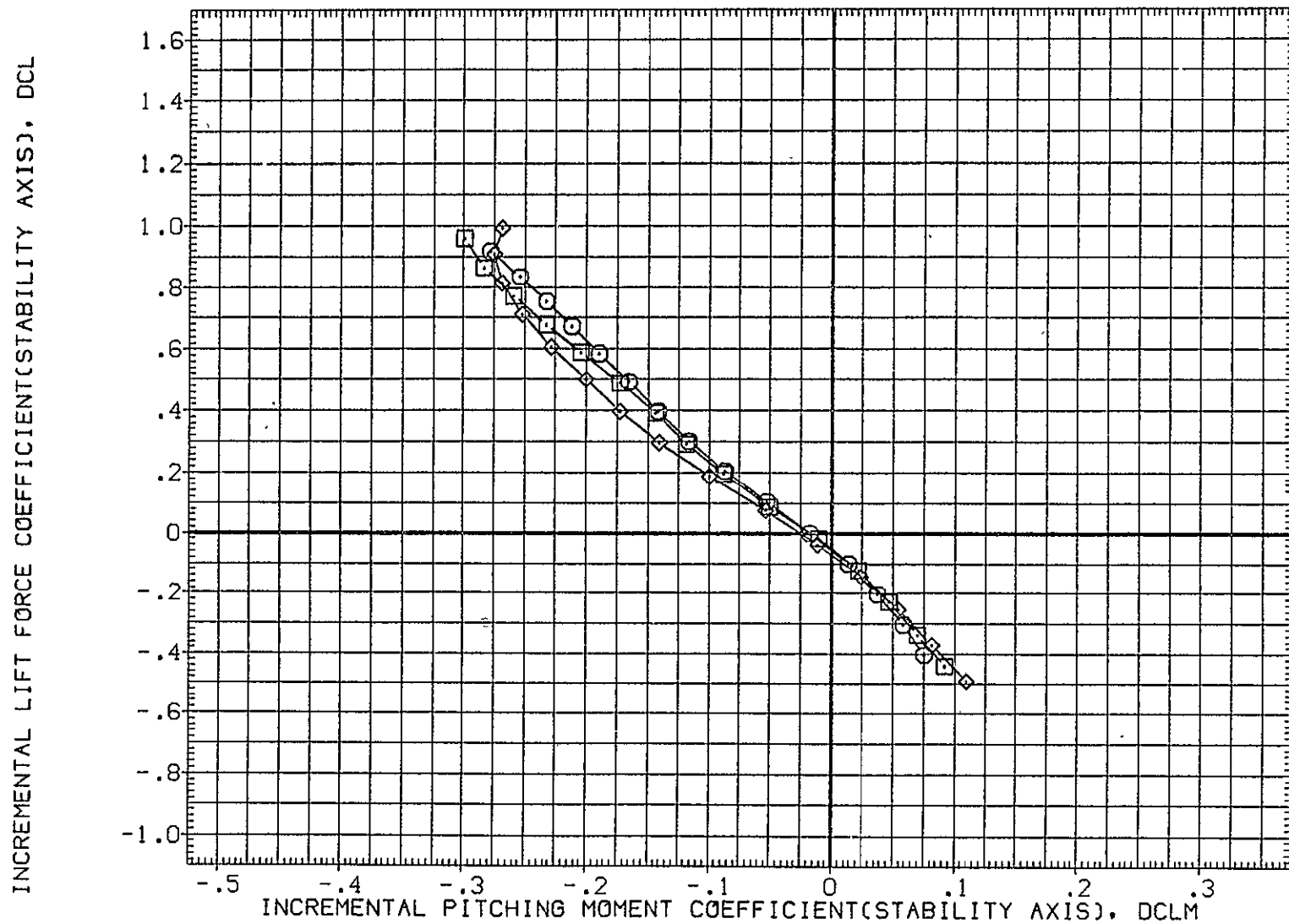


FIG. 36 747+ORB(8 DEG)+TIP FINS+SP45, FLAPS UP LAUNCH(S=+1)

747.

SYMBOL

MACH

PARAMETRIC VALUES

REFERENCE INFORMATION

○
□
◇

.500

BETA

.000

STAB

1.000

SREF

5500.0000

SQ.FT.

.600

RUD-U

.000

RUD-L

.000

LREF

327.8000

IN.

.700

ELV-1B

.000

ELV-0B

3.000

BREF

2348.0000

IN.

XMRP

1339.9100

IN. XC

S1-2

45.000

S3-4

45.000

YMRP

.0000

IN. YC

S5-6

45.000

ICRB

7.850

ZMRP

190.7500

IN. ZC

SCALE

.0300

CARRIER FRL ANGLE OF ATTACK, ALPHA, DEG.

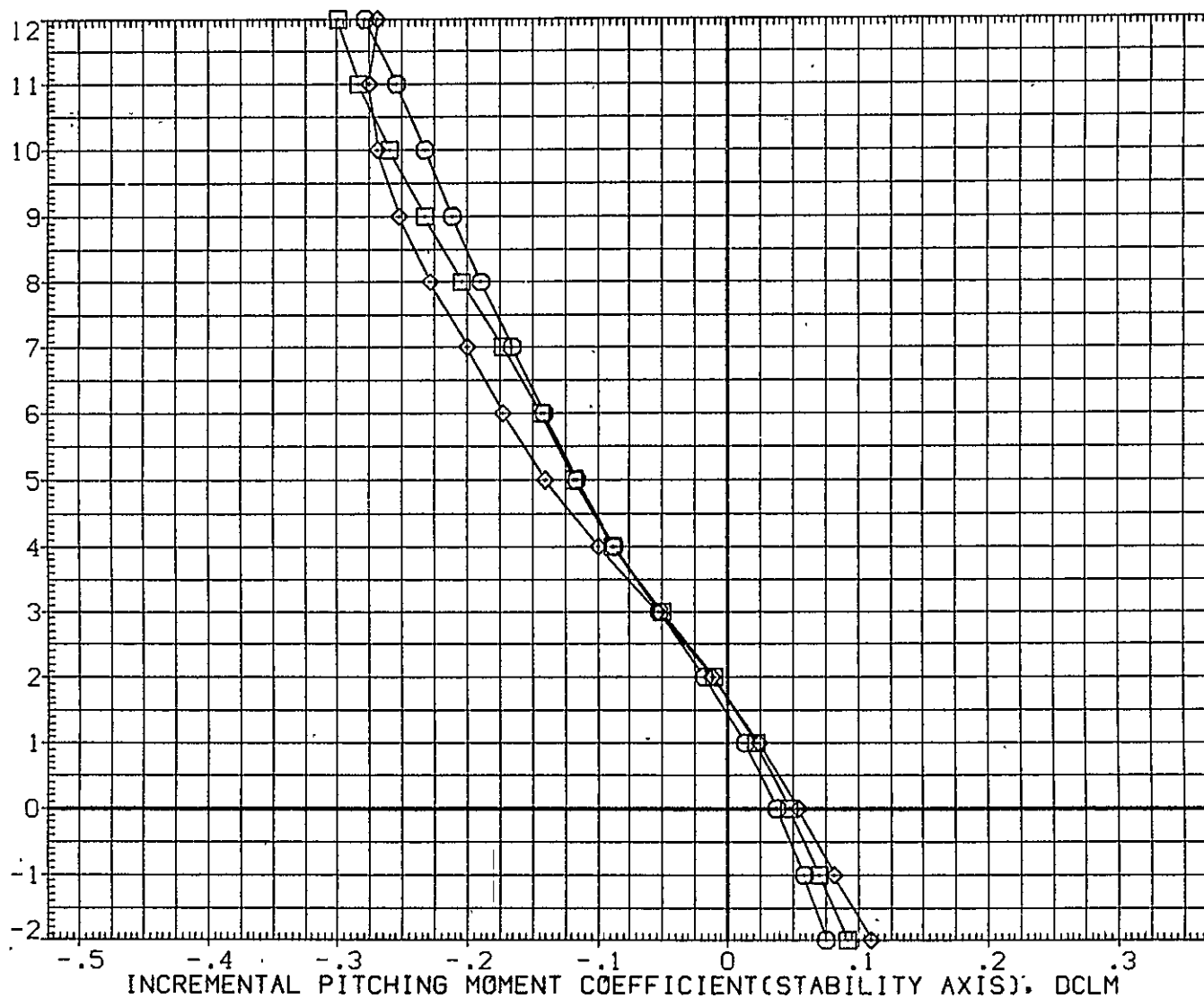


FIG. 36 747+ORB(8 DEG)+TIP FINS+SP45, FLAPS UP LAUNCH(S=+1)

747

CA5 0RB TC5 AT38.2 (PRES. K1 F20 H15.6 V9.1)(YGM080)

SYMBOL

○
□
◇

MACH

.501
.600
.700

BETA
RUD-U
ELV-1B
S1-2
S5-6

PARAMETRIC VALUES

.000 STAB 1.000
.000 RUD-L .000
.000 ELV-0B 3.000
45.000 S3-4 45.000
45.000 10RB 7.850

REFERENCE INFORMATION

SREF 2690.0000 SQ.FT.
LREF 474.8100 IN.
BREF 936.6800 IN.
XMRP 1109.0000 IN. X0
YMRP .0000 IN. Y0
ZMRP 375.0000 IN. Z0
SCALE .0300

LIFT COEFFICIENT, CL

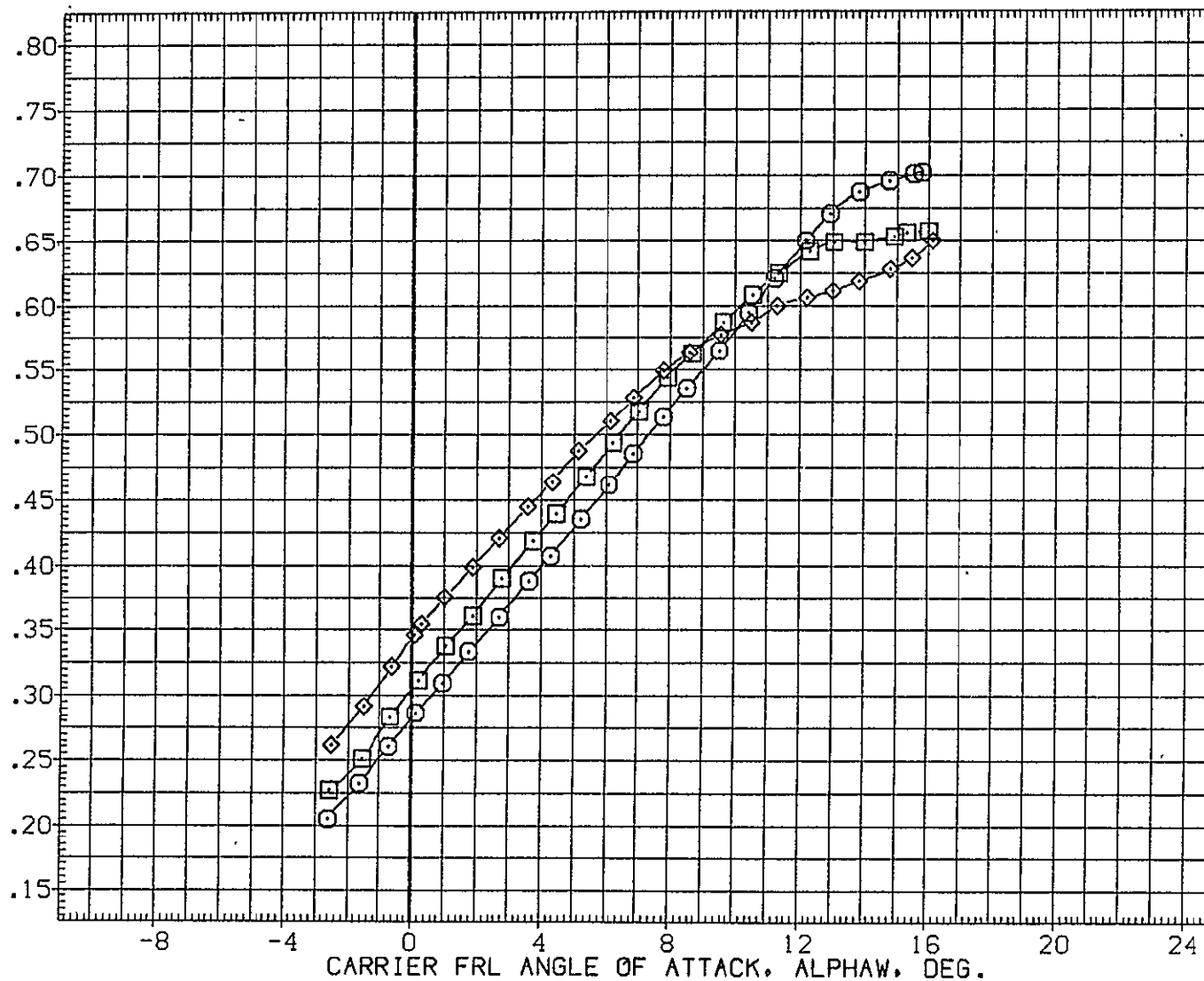


FIG. 37 747+0RB(8 DEG)+TIP FINS+SP45, FLAPS UP LAUNCH(S=+1)

0RB

SYMBOL	MACH	PARAMETRIC VALUES			
○	.501	BETA	.000	STAB	1.000
□	.600	RUD-U	.000	RUD-L	.000
◇	.700	ELV-1B	.000	ELV-0B	3.000
		S1-2	45.000	S3-4	45.000
		S5-6	45.000	10RB	7.850

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN. X0
YMRP	.0000	IN. Y0
ZMRP	375.0000	IN. Z0
SCALE	.0300	

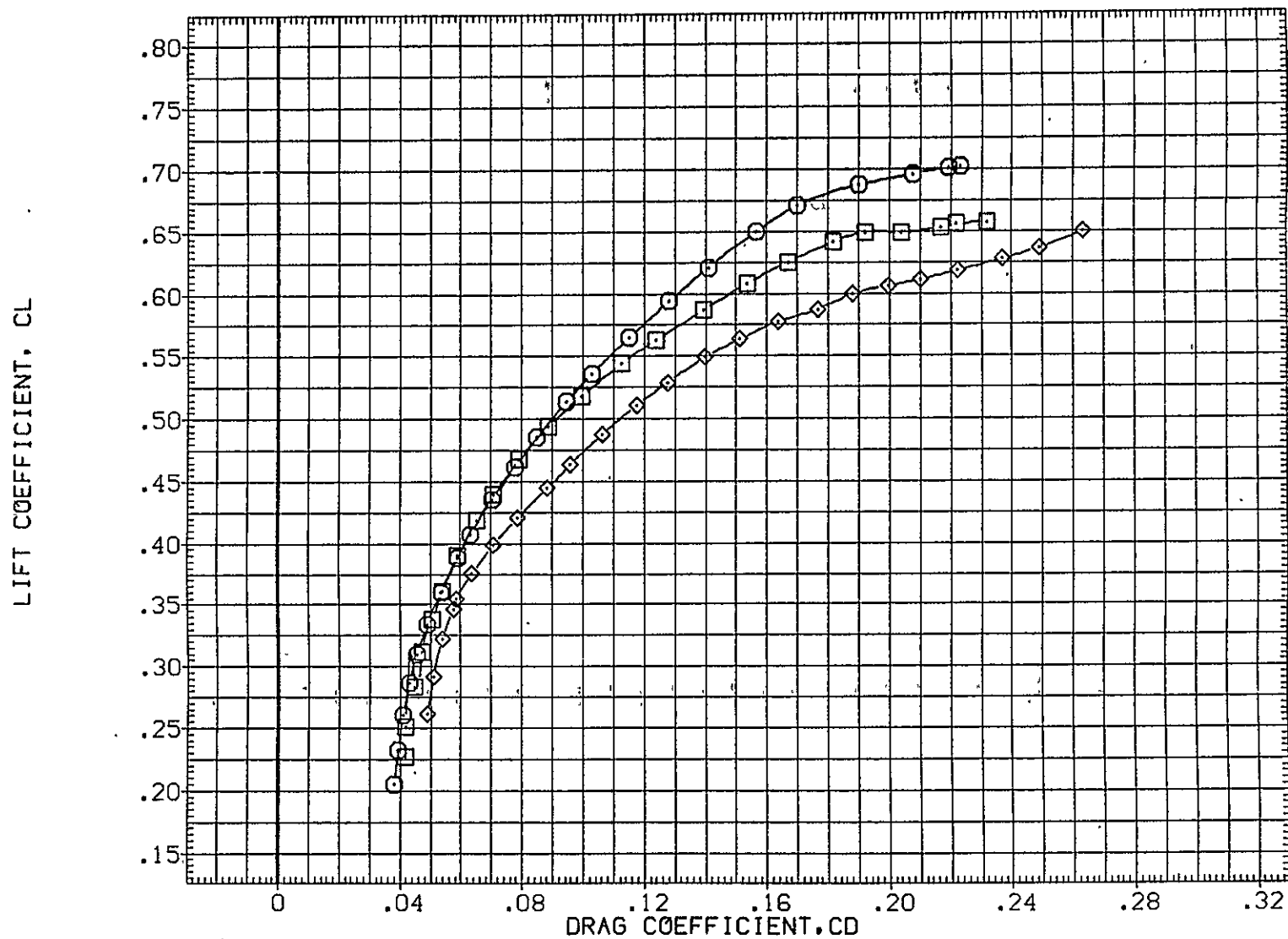


FIG. 37 747+0RB(8 DEG)+TIP FINS+SP45, FLAPS UP LAUNCH(S=+1)

0RB

CA5 ORB TC5 AT38.2 (PRES. K1 F20 H15.6 V9.1)(YGM080)

SYMBOL
○
□
◇

MACH
.501
.600
.700

BETA
RUD-U
ELV-18
SI-2
SS-6

PARAMETRIC VALUES
.000
.000
.000
45.000
45.000

STAB
RUD-L
ELV-08
S3-4
10RB
1.000
.000
3.000
45.000
7.850

REFERENCE INFORMATION

SREF 2690.0000 SQ.FT.
LREF 474.8100 IN.
BREF 936.6800 IN.
XMRP 1109.0000 IN. X0
YMRP .0000 IN. Y0
ZMRP 375.0000 IN. Z0
SCALE .0300

LIFT COEFFICIENT, CL

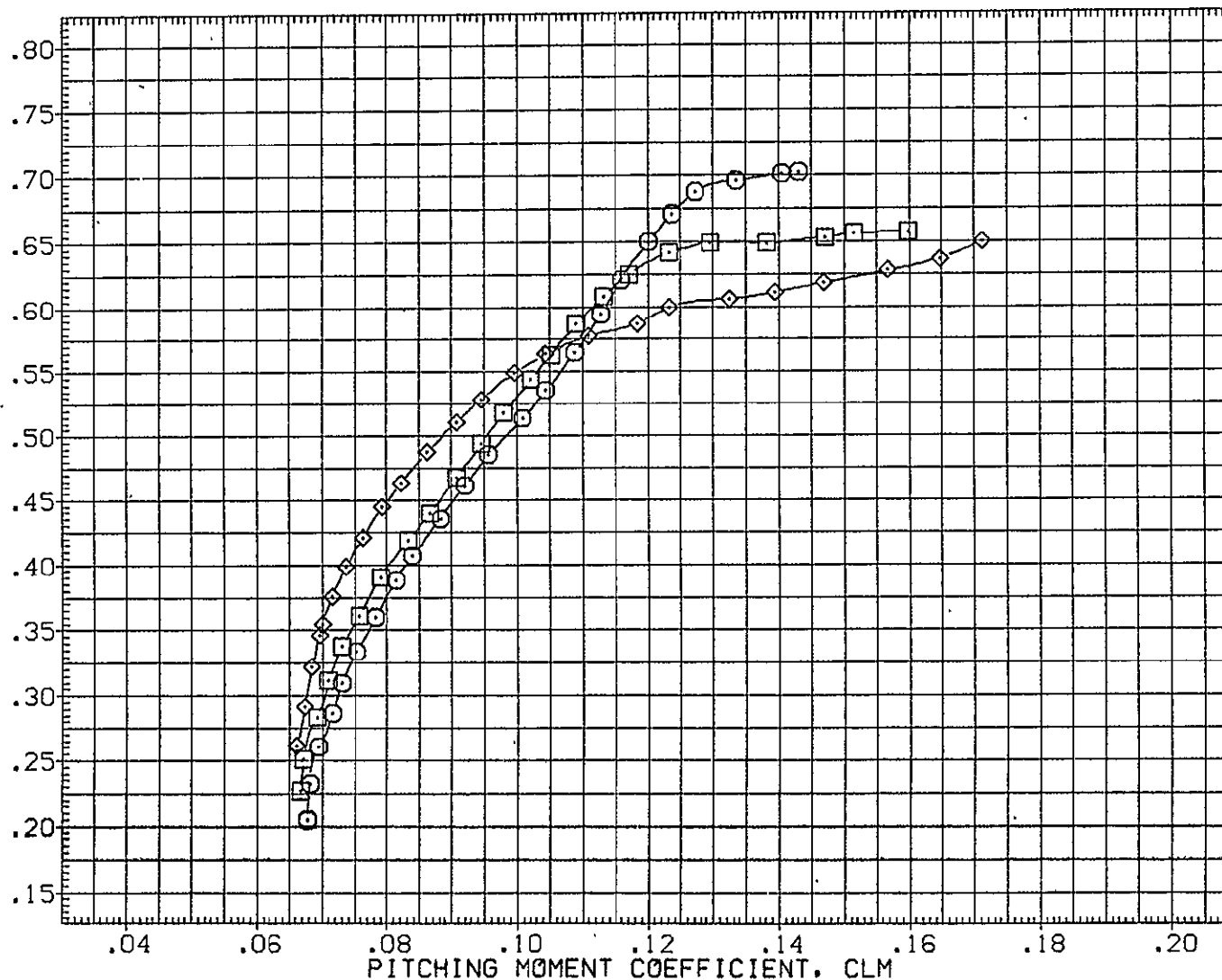


FIG. 37 747+ORB(8 DEG)+TIP FINS+SP45, FLAPS UP LAUNCH(S=+1)

ORB

SYMBOL	MACH	PARAMETRIC VALUES			
○	.501	BETA	.000	STAB	1.000
□	.600	RUD-U	.000	RUD-L	.000
◇	.700	ELV-1B	.000	ELV-0B	3.000
		S1-2	45.000	S3-4	45.000
		SS-6	45.000	10RB	7.850

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN. X0
YMRP	.0000	IN. Y0
ZMRP	375.0000	IN. Z0
SCALE	.0300	

CARRIER FRL ANGLE OF ATTACK, ALPHA, DEG.

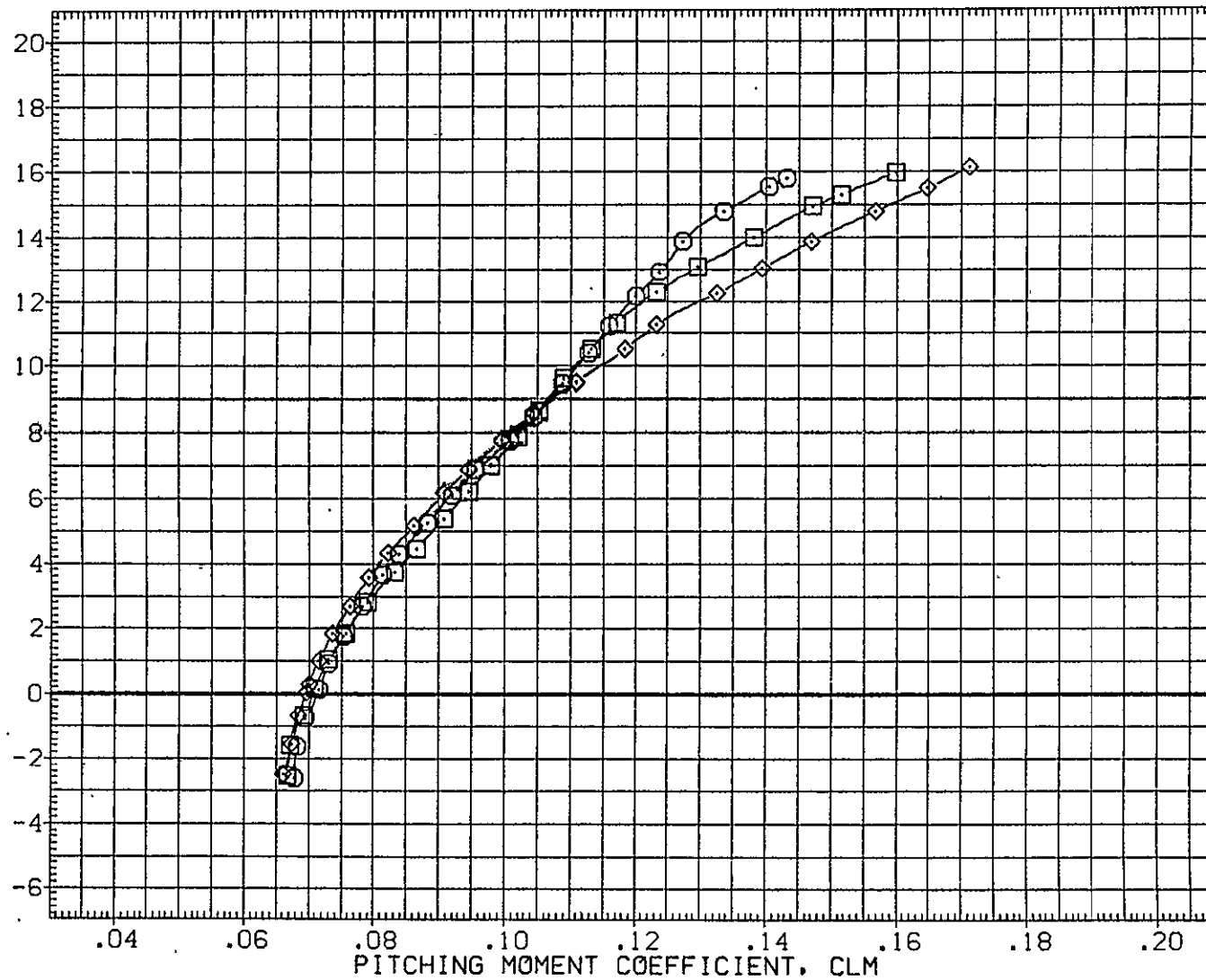


FIG. 37 747+0RB(8 DEG)+TIP FINS+SP45, FLAPS UP LAUNCH(S=+1)

0RB

CA5 K1 FO H15.6 V9.1 (PLUS. 0RB TC5 AT38.2)(RGM081)

SYMBOL
○
□
◇
△
▽

MACH	PARAMETRIC VALUES			
.150	BETA	.000	STAB	1.000
.299	RUD-U	.000	RUD-L	.000
.500	ELV-1B	.000	ELV-0B	3.000
.600	S1-2	.000	S3-4	45.000
.700	S5-6	20.000	10RB	7.850

REFERENCE INFORMATION		
SREF	5500.0000	50.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

LIFT COEFFICIENT, CL

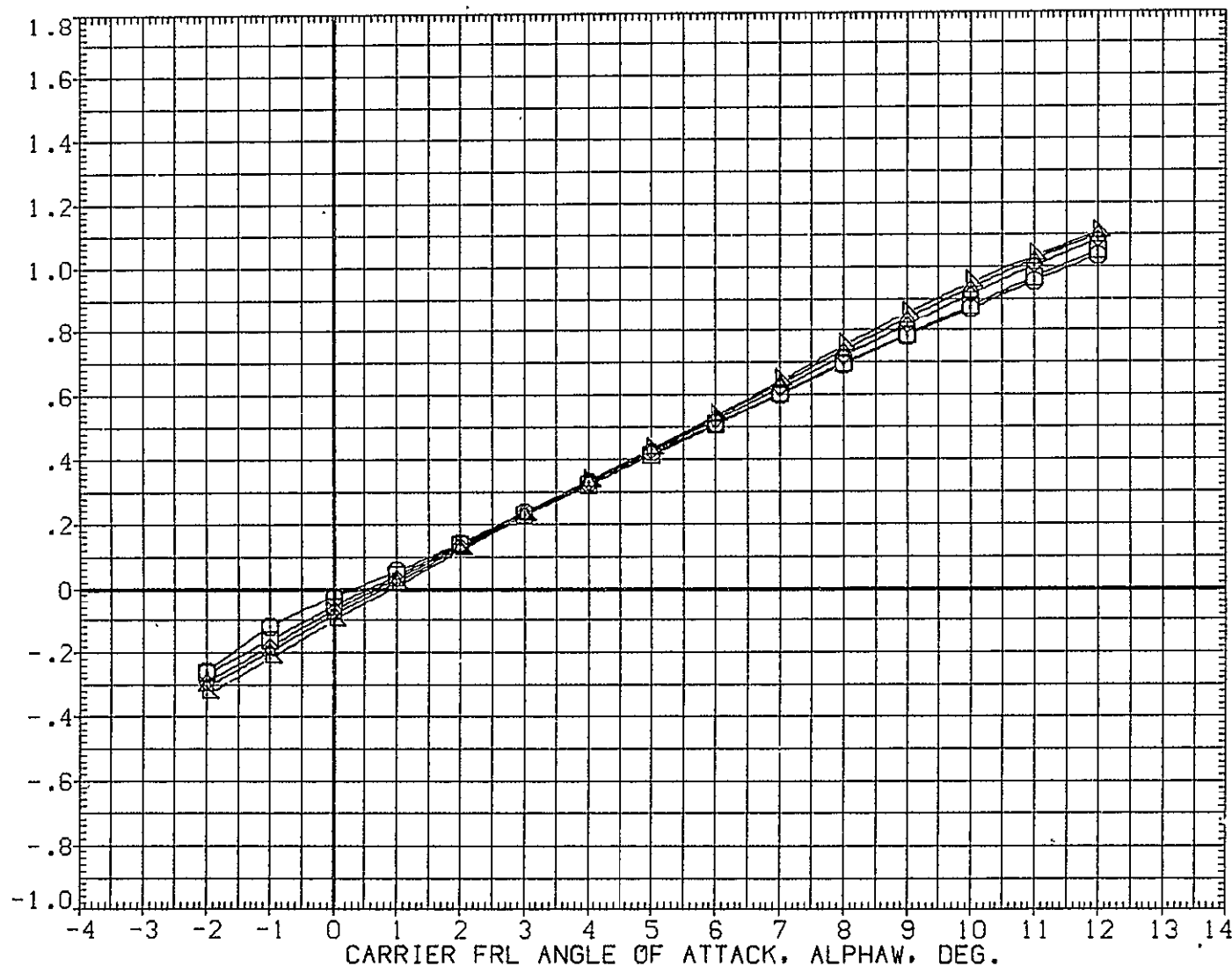


FIG. 38 747+0RB(8 DEG)+TIP FINS+STD SPD BRK,FLAPS UP LAUNCH,BASELINE(S=1) TOTAL

SYMBOL	MACH	PARAMETRIC VALUES				REFERENCE INFORMATION		
○	.150	BETA	.000	STAB	1.000	SREF	5500.0000	SQ.FT.
□	.299	RUD-U	.000	RUD-L	.000	LREF	327.8000	IN.
◇	.500	ELV-IB	.000	ELV-OB	3.000	BREF	2348.0000	IN.
△	.600	S1-2	.000	S3-4	45.000	XMRP	1339.9100	IN. XC
▽	.700	S5-6	20.000	10RB	7.850	YMRP	.0000	IN. YC
						ZMRP	190.7500	IN. ZC
						SCALE	.0300	

LIFT COEFFICIENT, CL

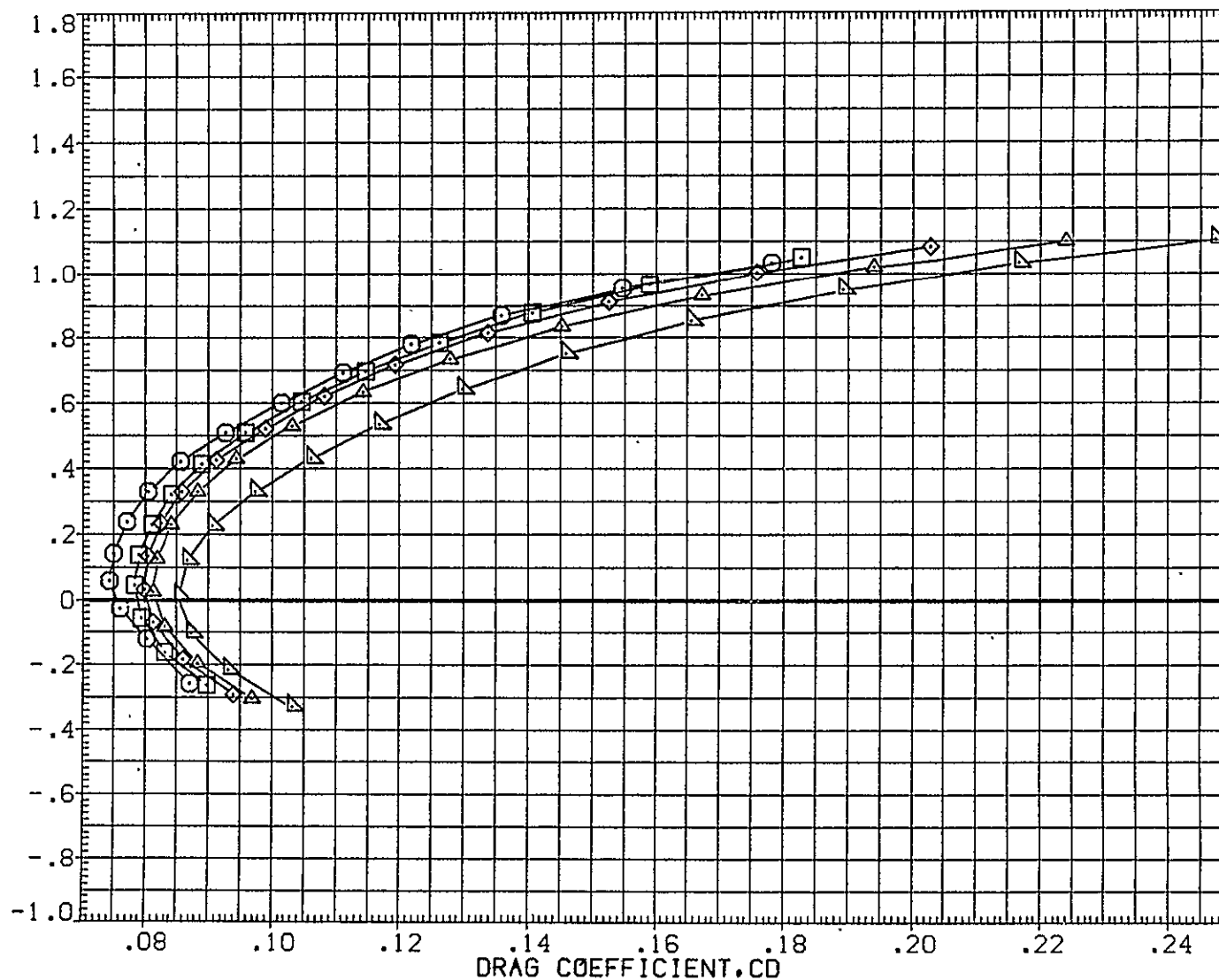


FIG. 38 747+0RB(8 DEG)+TIP FINS+STD SPD BRK, FLAPS UP LAUNCH, BASELINE(S=1) TOTAL

CA5 K1 FO H15.6 V9.1 (PLUS. ORB TC5 AT38.2)(RGM081)

SYMBOL	MACH	PARAMETRIC VALUES			
○	.150	BETA	.000	STAB	1.000
□	.299	RUD-U	.000	RUD-L	.000
◇	.500	ELV-1B	.000	ELV-OB	3.000
△	.600	S1-2	.000	S3-4	45.000
▽	.700	SS-6	20.000	ICRB	7.850

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

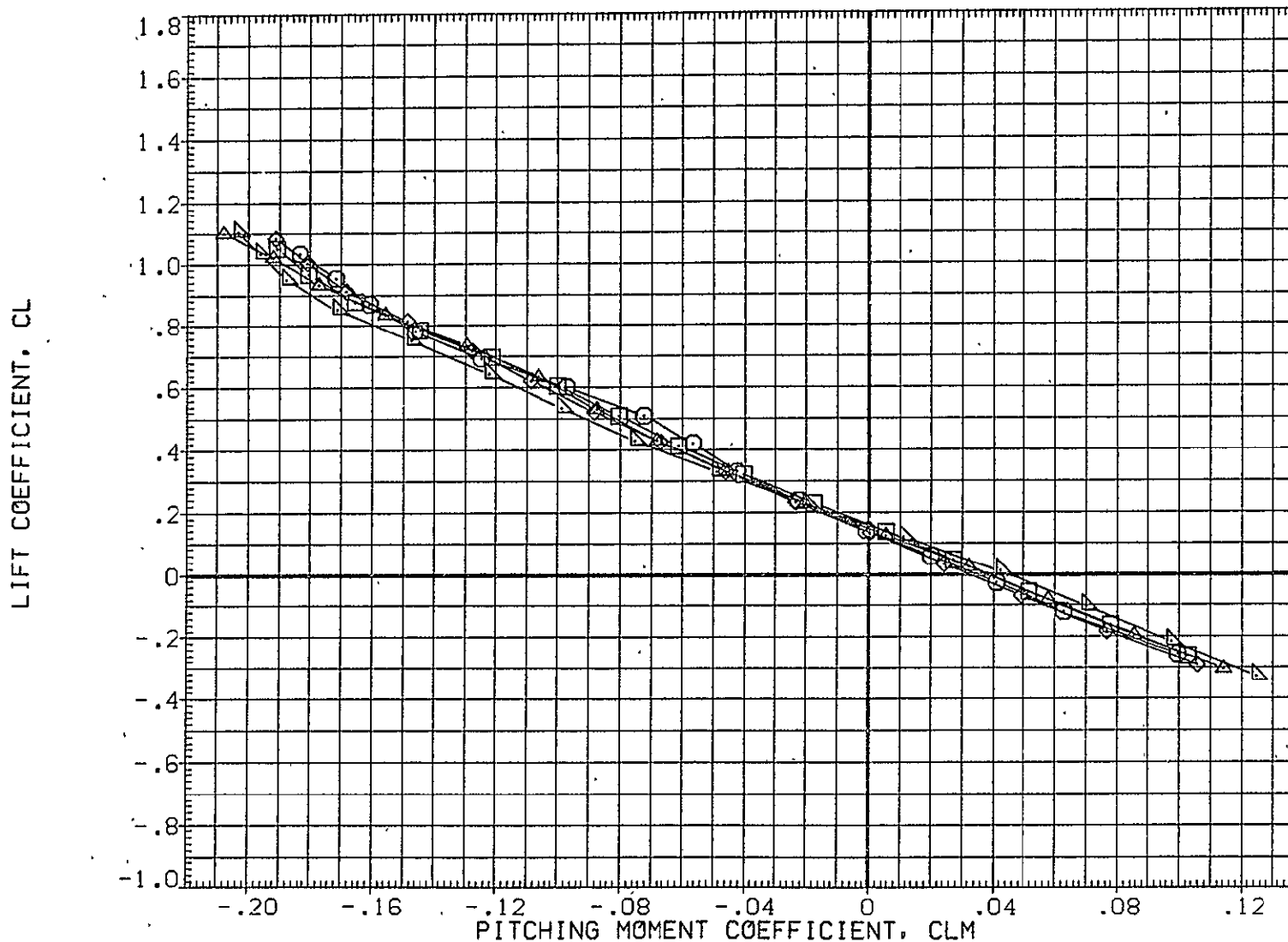


FIG. 38 747+ORB(8 DEG)+TIP FINS+STD SPD BRK,FLAPS UP LAUNCH,BASELINE(S=1) TOTAL

SYMBOL	MACH	PARAMETRIC VALUES				REFERENCE INFORMATION		
○	.150	BETA	.000	STAB	1.000	SREF	5500.0000	SQ.FT.
□	.299	RUD-U	.000	RUD-L	.000	LREF	327.8000	IN.
◇	.500	ELV-1B	.000	ELV-0B	3.000	BREF	2348.0000	IN.
△	.600	S1-2	.000	S3-4	45.000	XMRP	1339.9100	IN. XC
▽	.700	S5-6	20.000	10RB	7.850	YMRP	.0000	IN. YC
						ZMRP	190.7500	IN. ZC
						SCALE	.0300	

CARRIER FRL ANGLE OF ATTACK, ALPHA, DEG.

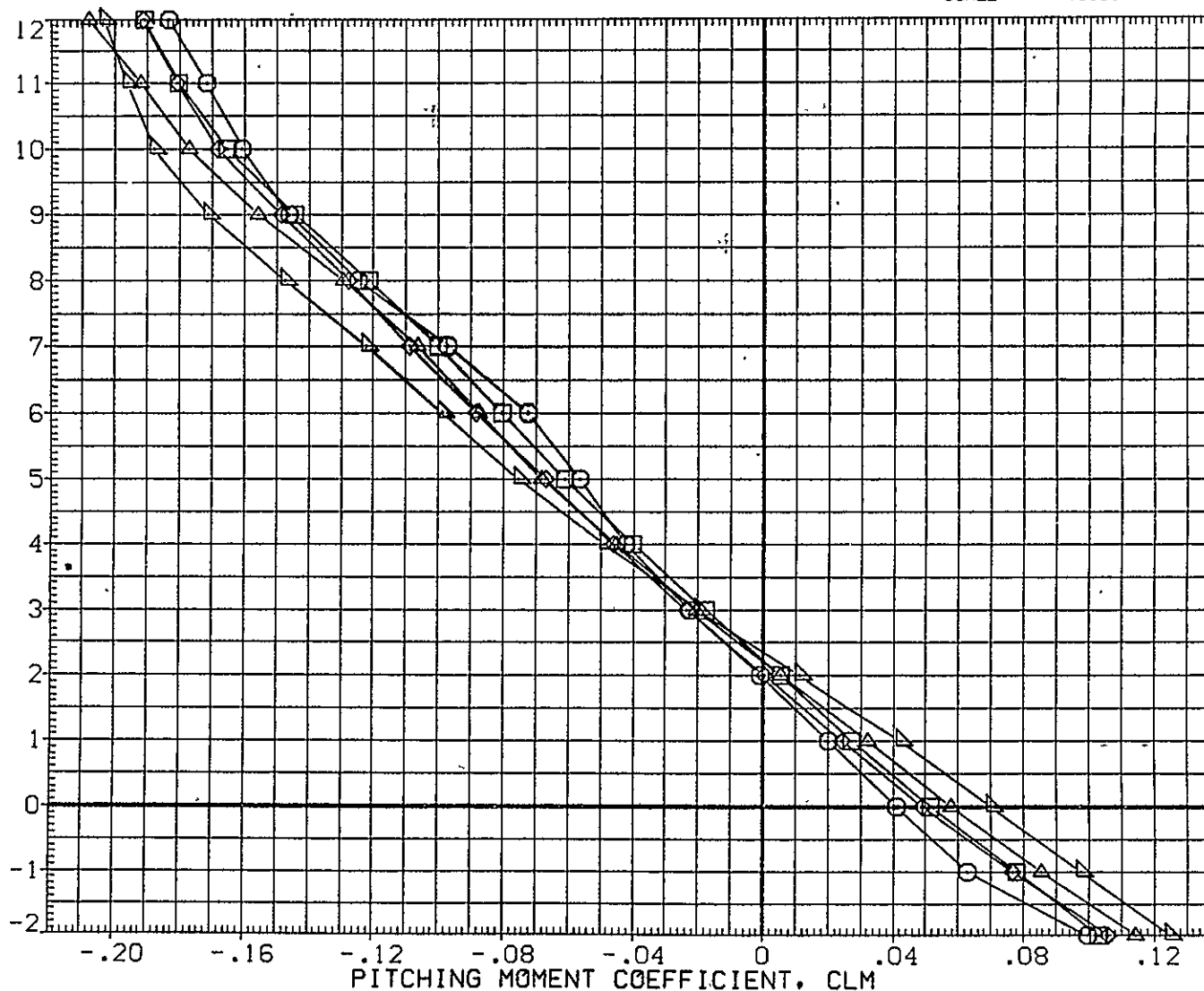


FIG. 38 747+0RB(8 DEG)+TIP FINS+STD SPD BRK, FLAPS UP. LAUNCH, BASELINE(S=1) TOTAL

CA5 K1 F0 H15.6 V9.1 MINUS ORB TC5 AT38.2 (BGM081)

SYMBOL
○
□
◇
△
▽

MACH	PARAMETRIC VALUES			
.150	BETA	.000	STAB	1.000
.299	RUD-U	.000	RUD-L	.000
.500	ELV-IB	.000	ELV-OB	3.000
.600	S1-2	.000	S3-4	45.000
.700	S5-6	20.000	IORB	7.850

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

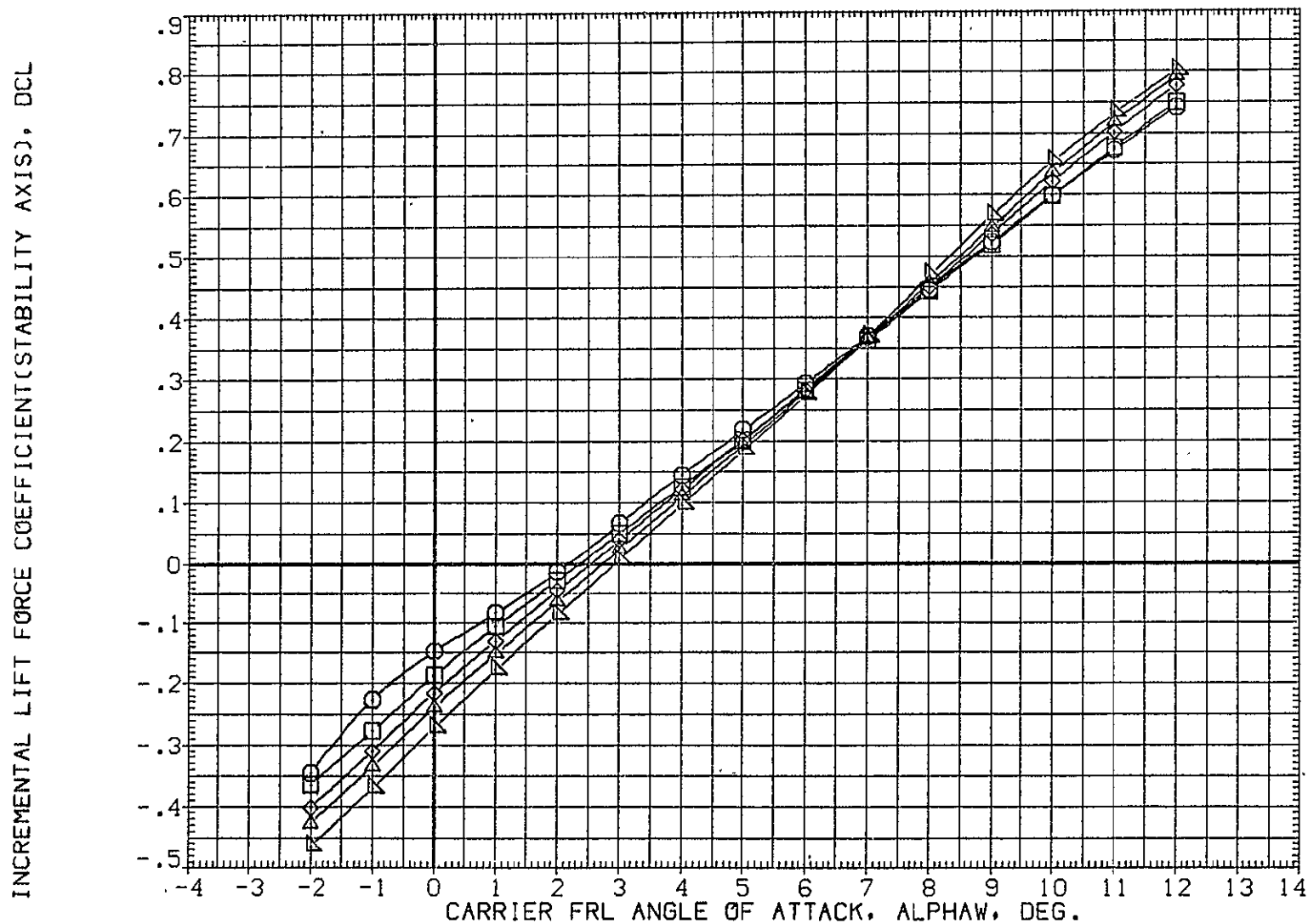


FIG. 39 747+ORB(8 DEG)+TIP FINS+STD SPD BRK, FLAPS UP LAUNCH, BASELINE(S=1) 747

SYMBOL	MACH	PARAMETRIC VALUES			
○	.150	BETA	.000	STAB	1.000
□	.299	RUD-U	.000	RUD-L	.000
◇	.500	ELV-1B	.000	ELV-0B	3.000
△	.600	S1-2	.000	S3-4	45.000
▽	.700	S5-6	20.000	10RB	7.850

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

INCREMENTAL LIFT FORCE COEFFICIENT(STABILITY AXIS), DCL

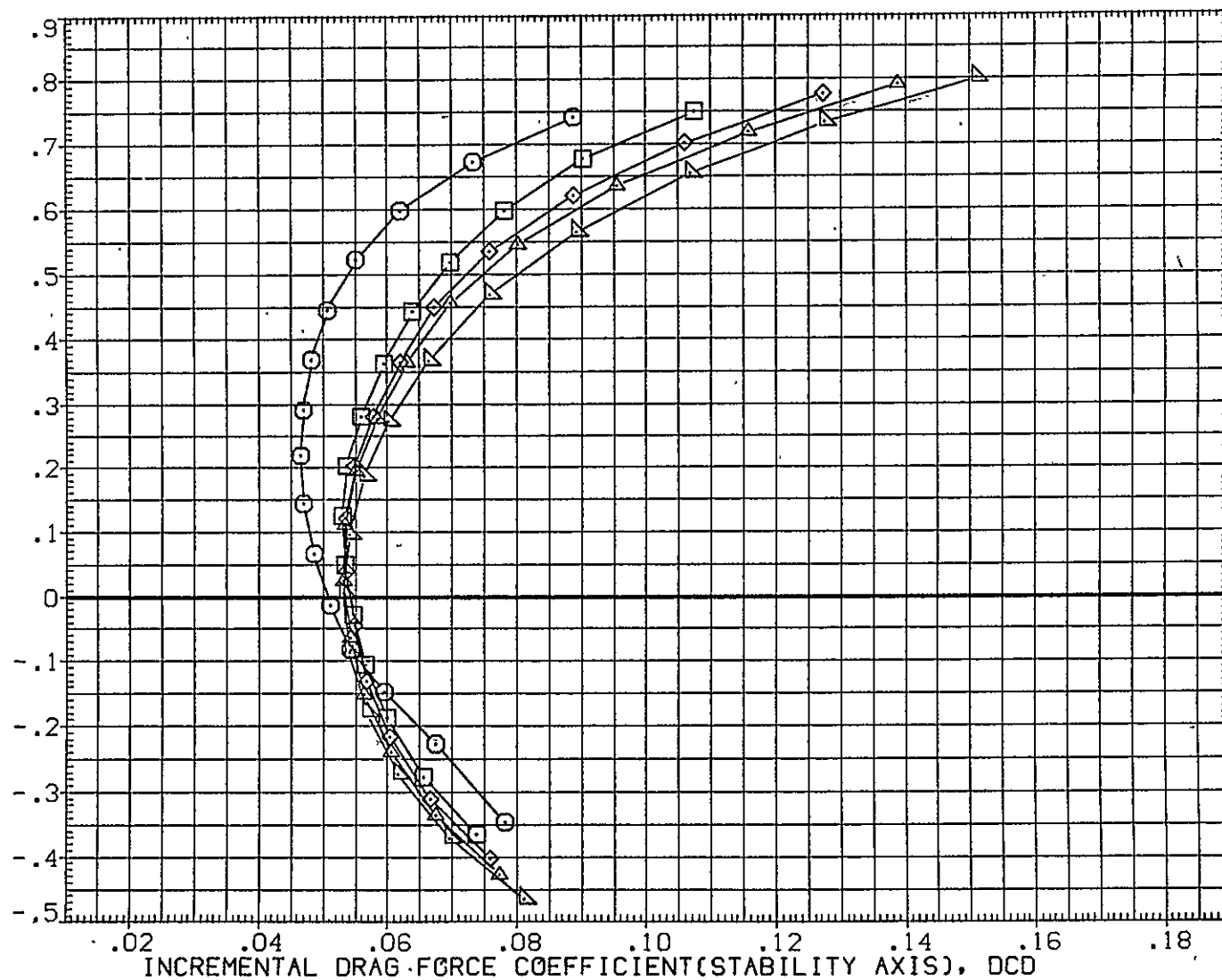


FIG. 39 747+0RB(8 DEG)+TIP FINS+STD SPD BRK,FLAPS UP LAUNCH,BASELINE(S=1) 747

CA5 K1 FO H15.6 V9.1 MINUS 0RB TC5 AT38.2 (BGM081)

SYMBOL
○
□
◇
△
▽

MACH	PARAMETRIC VALUES			
.150	BETA	.000	STAB	1.000
.299	RUD-U	.000	RUD-L	.000
.500	ELV-1B	.000	ELV-0B	3.000
.600	S1-2	.000	S3-4	45.000
.700	S5-6	20.000	10RB	7.850

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

INCREMENTAL LIFT FORCE COEFFICIENT(STABILITY AXIS), DCL

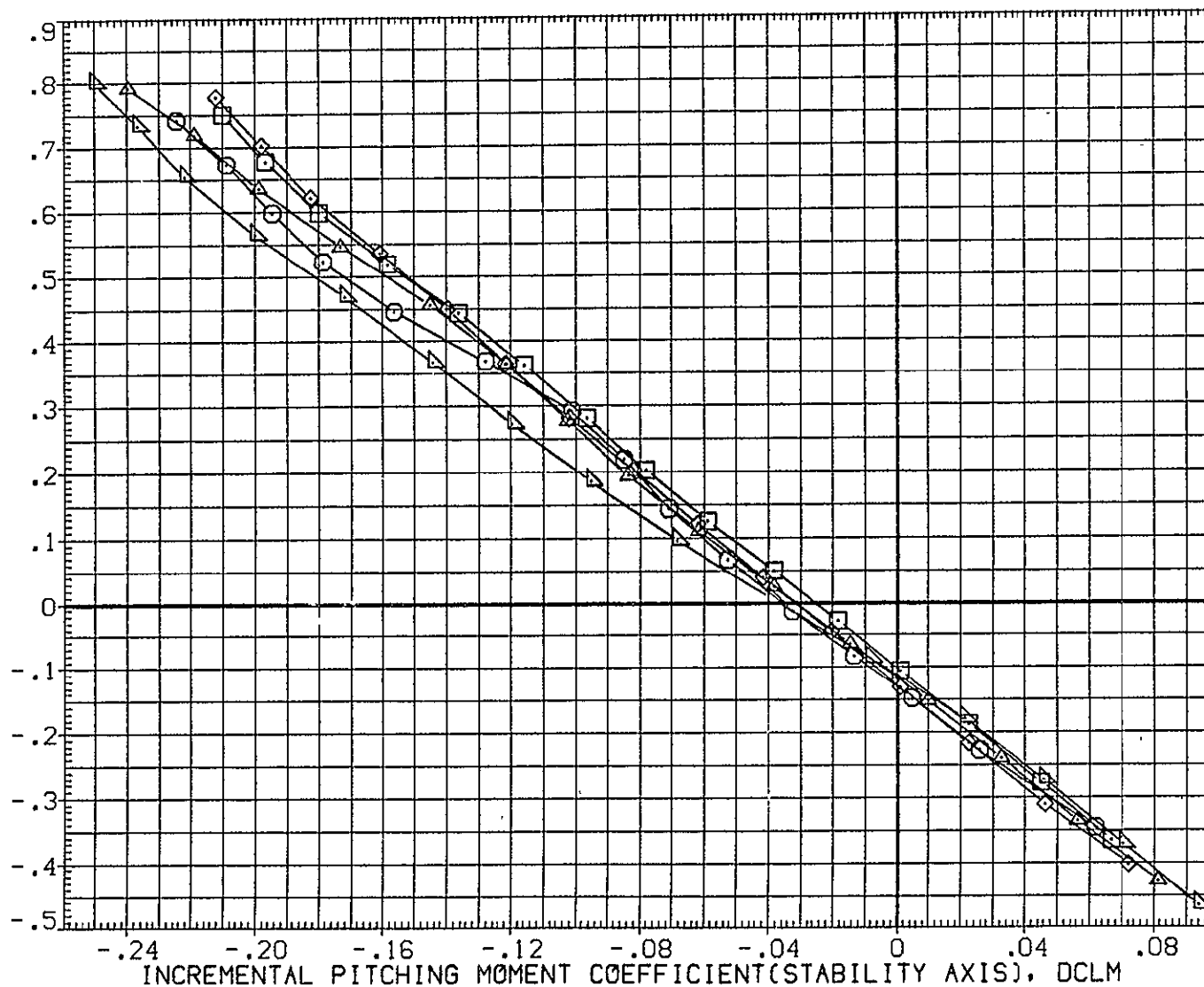


FIG. 39 747+0RB(8 DEG)+TIP FINS+STD SPD BRK,FLAPS UP LAUNCH,BASELINE(S=1) 747

SYMBOL
○
□
◇
△
▽

MACH

PARAMETRIC VALUES

.150	BETA	.000	STAB	1.000
.299	RUD-U	.000	RUD-L	.000
.500	ELV-1B	.000	ELV-0B	3.000
.600	S1-2	.000	S3-4	45.000
.700	S5-6	20.000	ICRB	7.850

REFERENCE INFORMATION

SREF	5500.0000	SQ.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

CARRIER FRL ANGLE OF ATTACK, ALPHAW, DEG.

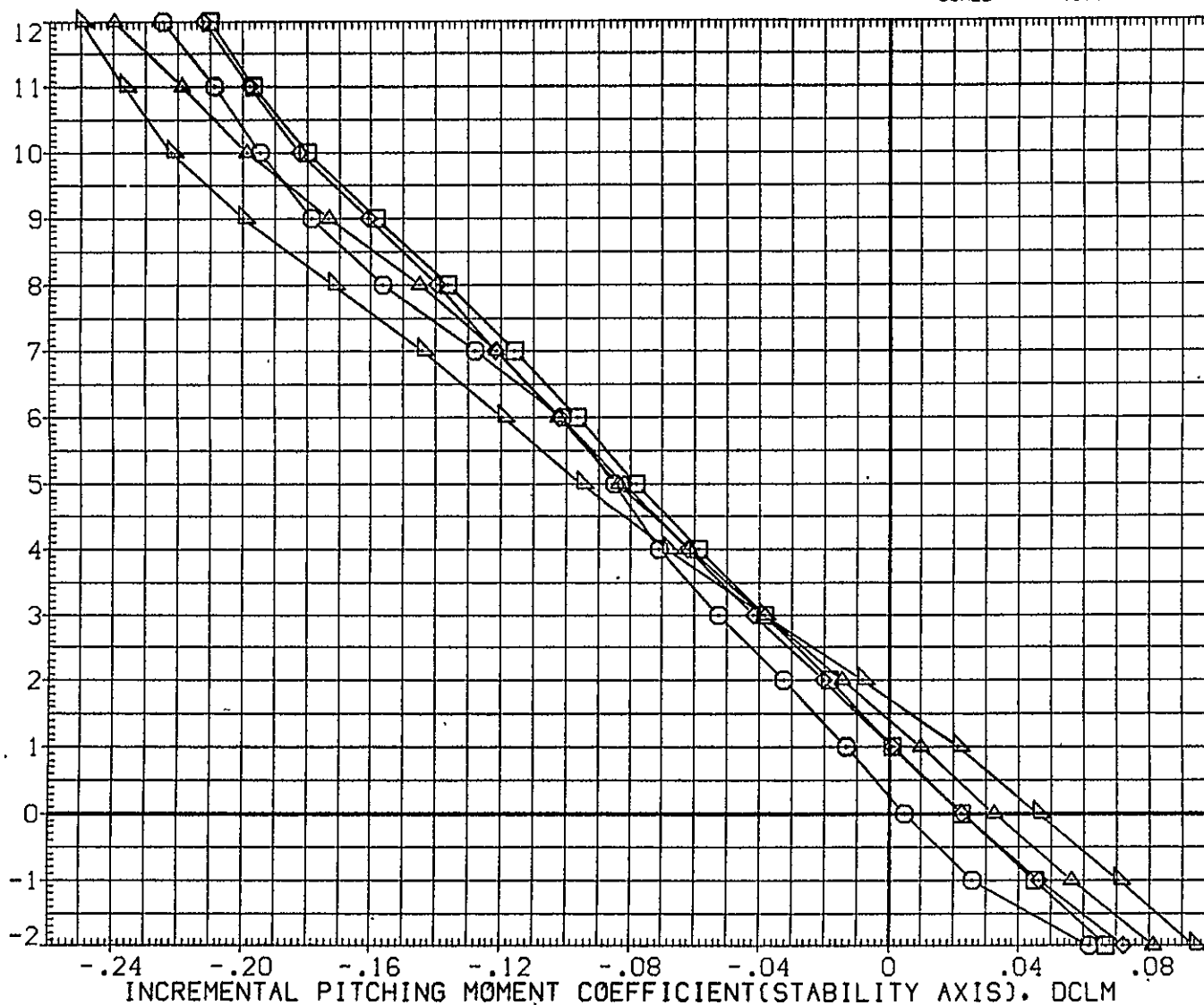


FIG. 39 747+ORB(8 DEG)+TIP FINS+STD SPD BRK, FLAPS UP LAUNCH, BASELINE(S=1) 747

CA5 ORB TC5 AT38.2 (PRES. K1 FO H15.6 V9.1)(YGM081)

SYMBOL	MACH	PARAMETRIC VALUES				REFERENCE INFORMATION	
○	.151	BETA	.000	STAB	1.000	SREF	2690.0000 SQ.FT.
□	.300	RUD-U	.000	RUD-L	.000	LREF	474.8100 IN.
◇	.501	ELV-1B	.000	ELV-0B	3.000	BREF	936.6800 IN.
△	.600	S1-2	.000	S3-4	45.000	XMRP	1109.0000 IN. X0
▽	.699	S5-6	20.000	10RB	7.850	YMRP	.0000 IN. Y0
						ZMRP	375.0000 IN. Z0
						SCALE	.0300

LIFT COEFFICIENT, CL

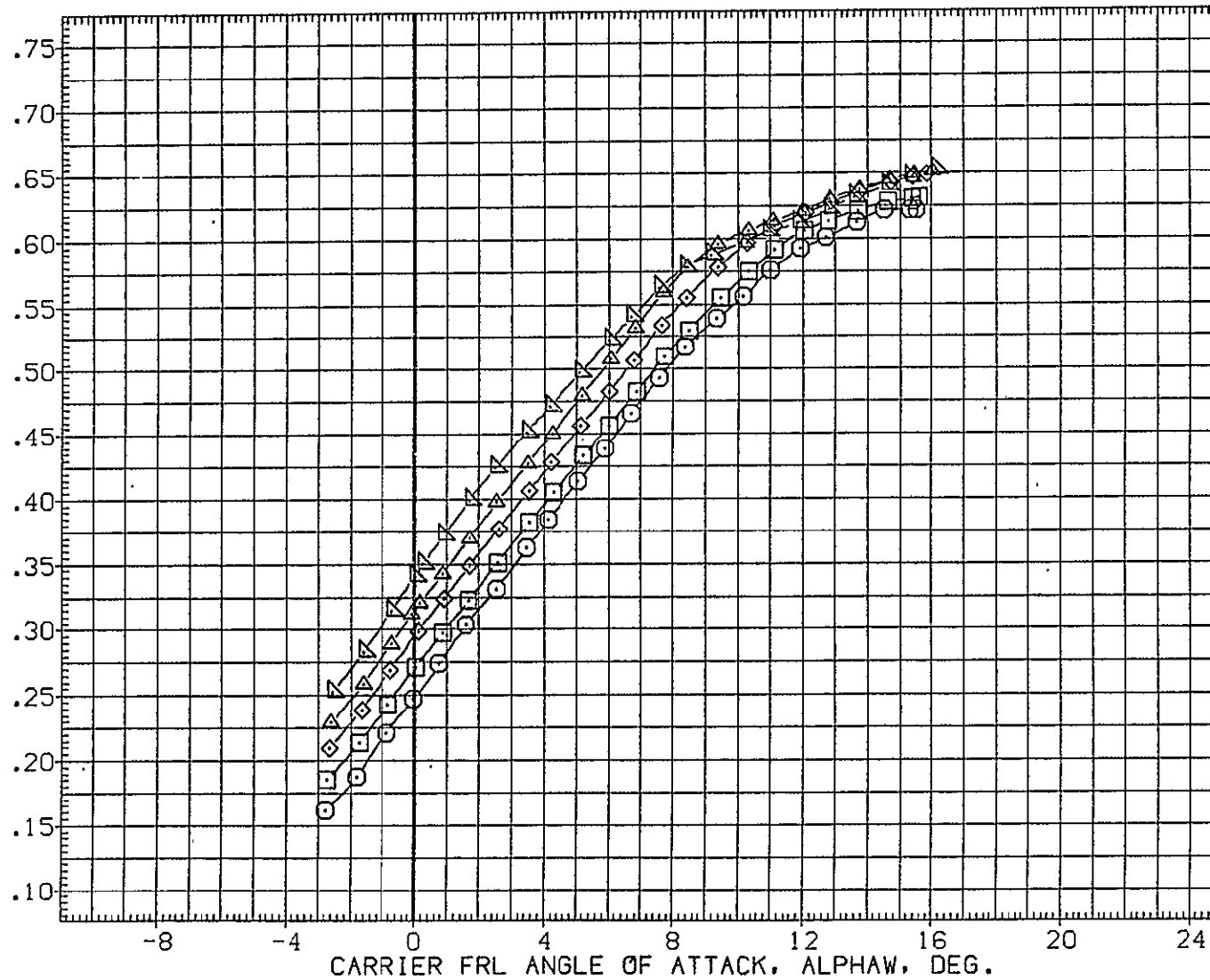


FIG. 40 747+ORB(8 DEG)+TIP FINS+STD SPD BRK,FLAPS UP LAUNCH,BASELINE(S=1) ORB

SYMBOL	MACH	PARAMETRIC VALUES				REFERENCE INFORMATION		
○	.151	BETA	.000	STAB	1.000	SREF	2690.0000	SQ.FT.
□	.300	RUD-U	.000	RUD-L	.000	LREF	474.8100	IN.
◇	.501	ELV-1B	.000	ELV-OB	3.000	BREF	936.6800	IN.
△	.600	S1-2	.000	S3-4	45.000	XMRP	1109.0000	IN. X0
▽	.699	SS-6	20.000	10RB	7.850	YMRP	.0000	IN. Y0
						ZMRP	375.0000	IN. Z0
						SCALE	.0300	

LIFT COEFFICIENT, CL

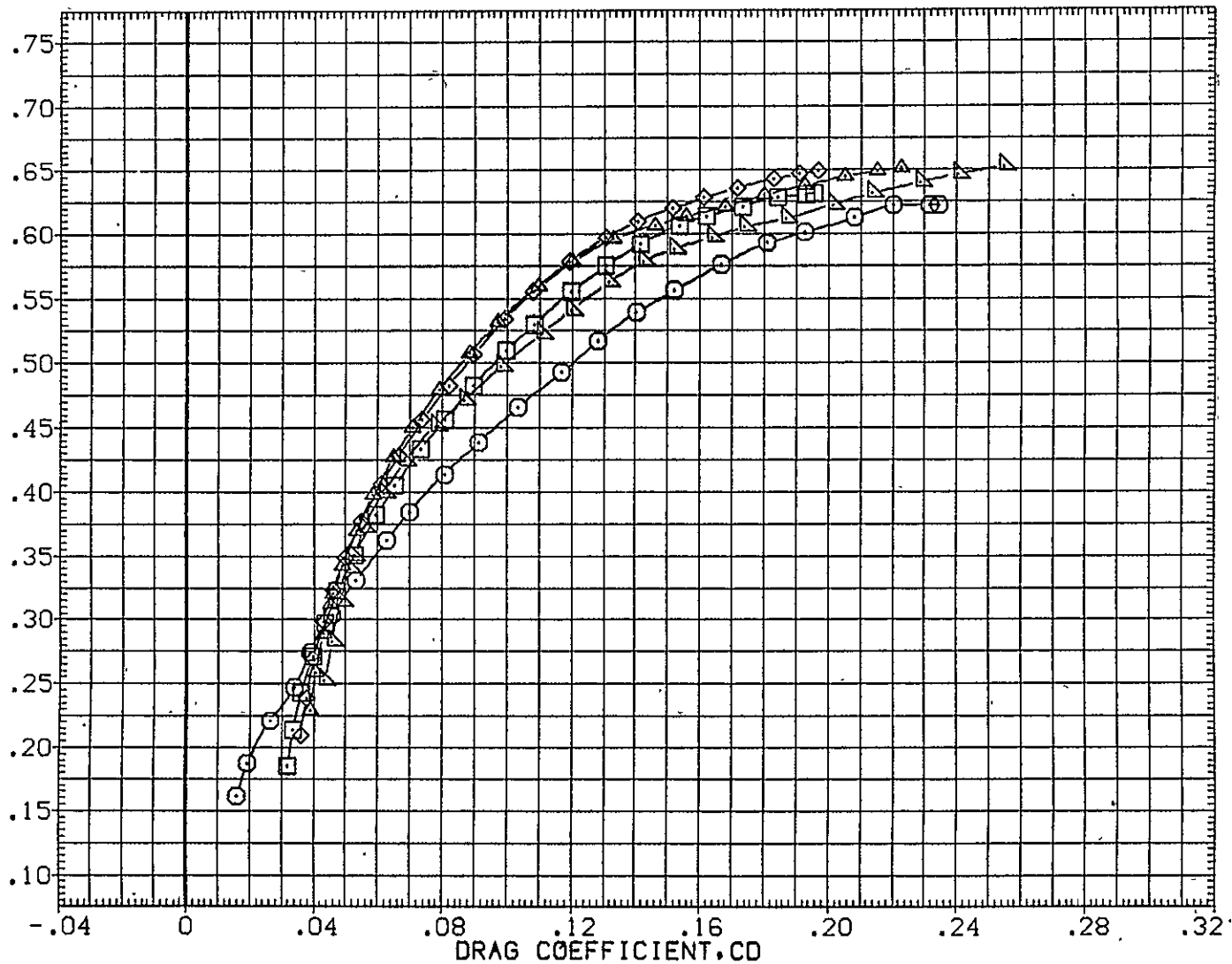


FIG. 40 747+ORB(8 DEG)+TIP FINS+STD SPD BRK, FLAPS UP LAUNCH, BASELINE(S=1) ORB

CA5 ORB TC5 AT38.2 (PRES. K1 FO H15.6 V9.1)(YGM081)

SYMBOL
○
□
◇
△
▽

MACH

.151
.300
.501
.600
.699

BETA
RUD-U
ELV-1B
SI-2
SS-6

PARAMETRIC VALUES

.000 STAB 1.000
.000 RUD-L .000
.000 ELV-OB 3.000
.000 S3-4 45.000
20.000 IORB 7.850

REFERENCE INFORMATION

SREF 2690.0000 SQ.FT.
LREF 474.8100 IN.
BREF 936.6800 IN.
XMRP 1109.0000 IN. X0
YMRP .0000 IN. Y0
ZMRP 375.0000 IN. Z0
SCALE .0300

LIFT COEFFICIENT, CL

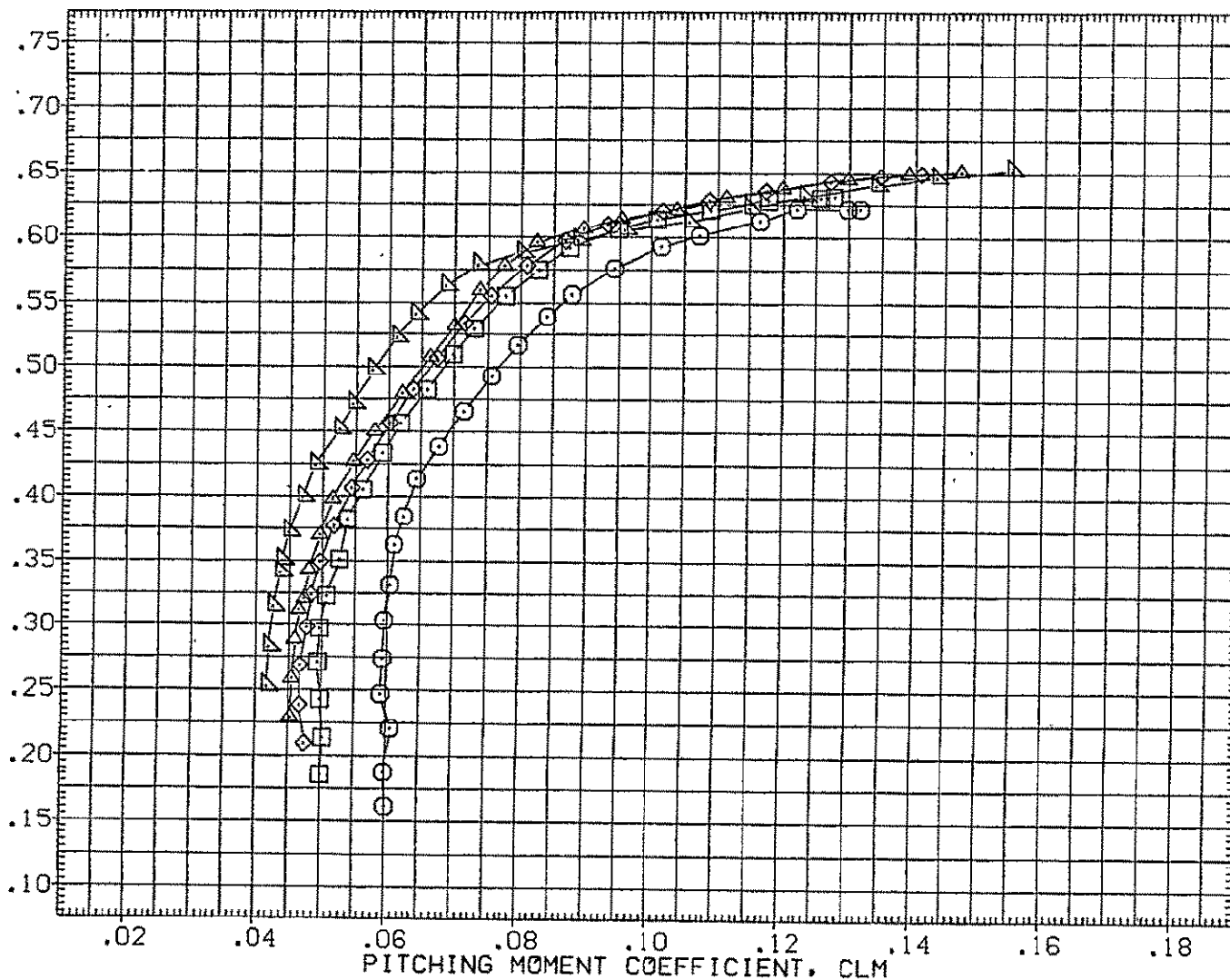


FIG. 40 747+ORB(8 DEG)+TIP FINS+STD SPD BRK,FLAPS UP LAUNCH,BASELINE(S=1) ORB

SYMBOL	MACH	PARAMETRIC VALUES				REFERENCE INFORMATION		
○	.151	BETA	.000	STAB	1.000	SREF	2690.0000	50.FT.
□	.300	RUD-U	.000	RUD-L	.000	LREF	474.8100	IN.
◇	.501	ELV-1B	.000	ELV-0B	3.000	BREF	936.6800	IN.
△	.600	S1-2	.000	S3-4	45.000	XMRP	1109.0000	IN. X0
▽	.699	S5-6	20.000	10RB	7.850	YMRP	.0000	IN. Y0
						ZMRP	375.0000	IN. Z0
						SCALE	.0300	

CARRIER FRL ANGLE OF ATTACK, ALPHA, DEG.

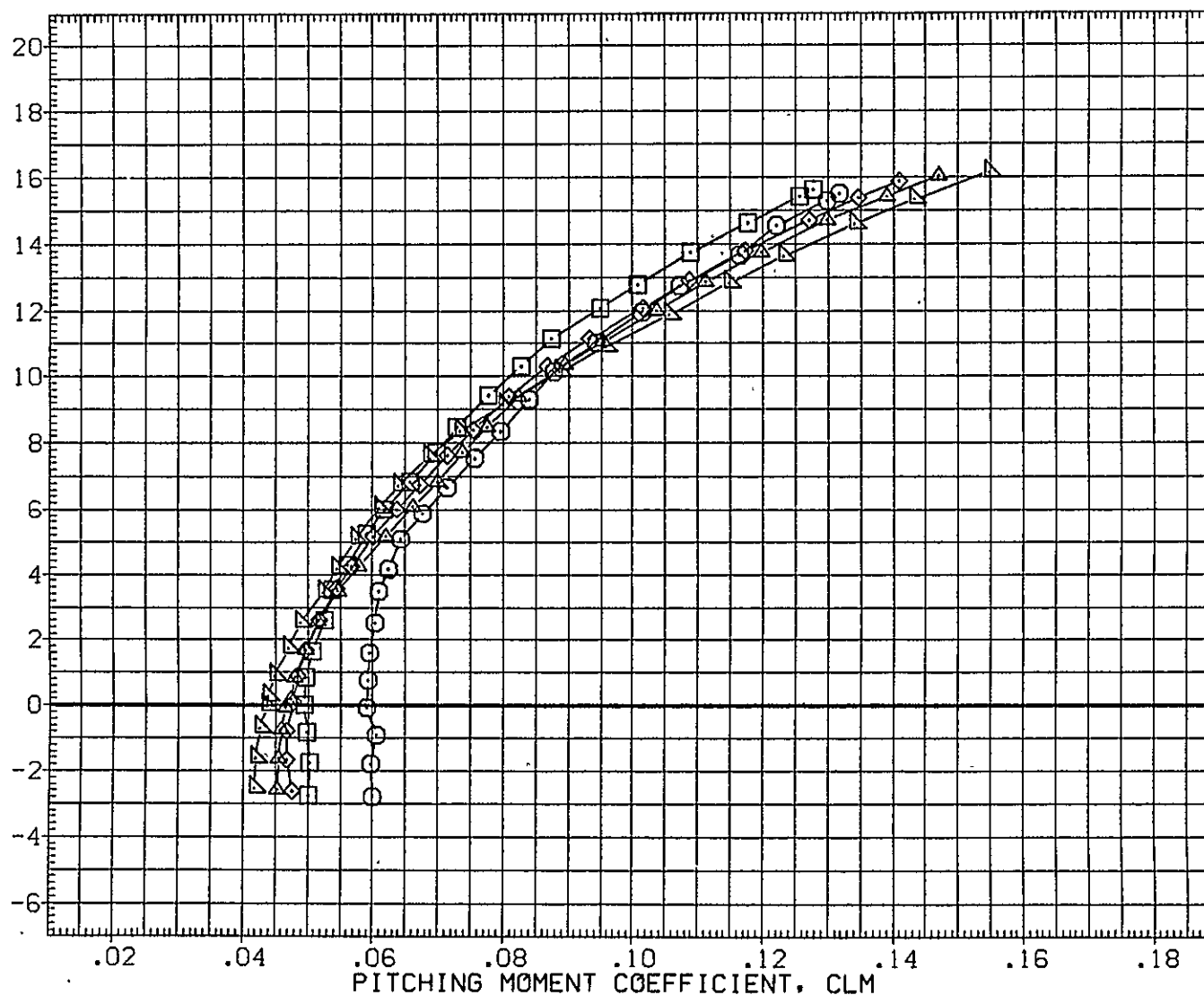


FIG. 40 747+0RB(8 DEG)+TIP FINS+STD SPD BRK,FLAPS UP LAUNCH,BASELINE(S=1) 0RB

CA5 K1 F0 H15.6 V9.1 (PLUS. ORB TC5 AT38.2)(RGM084)

SYMBOL	MACH	PARAMETRIC VALUES				REFERENCE INFORMATION		
○	.300	BETA	.000	STAB	-2.000	SREF	5500.0000	SQ.FT.
□	.500	RUD-U	.000	RUD-L	.000	LREF	327.8000	IN.
◇	.600	ELV-1B	.000	ELV-OB	3.000	BREF	2348.0000	IN.
△	.700	S1-2	.000	S3-4	45.000	XMRP	1339.9100	IN. XC
		S5-6	20.000	ICRB	7.850	YMRP	.0000	IN. YC
						ZMRP	190.7500	IN. ZC
						SCALE	.0300	

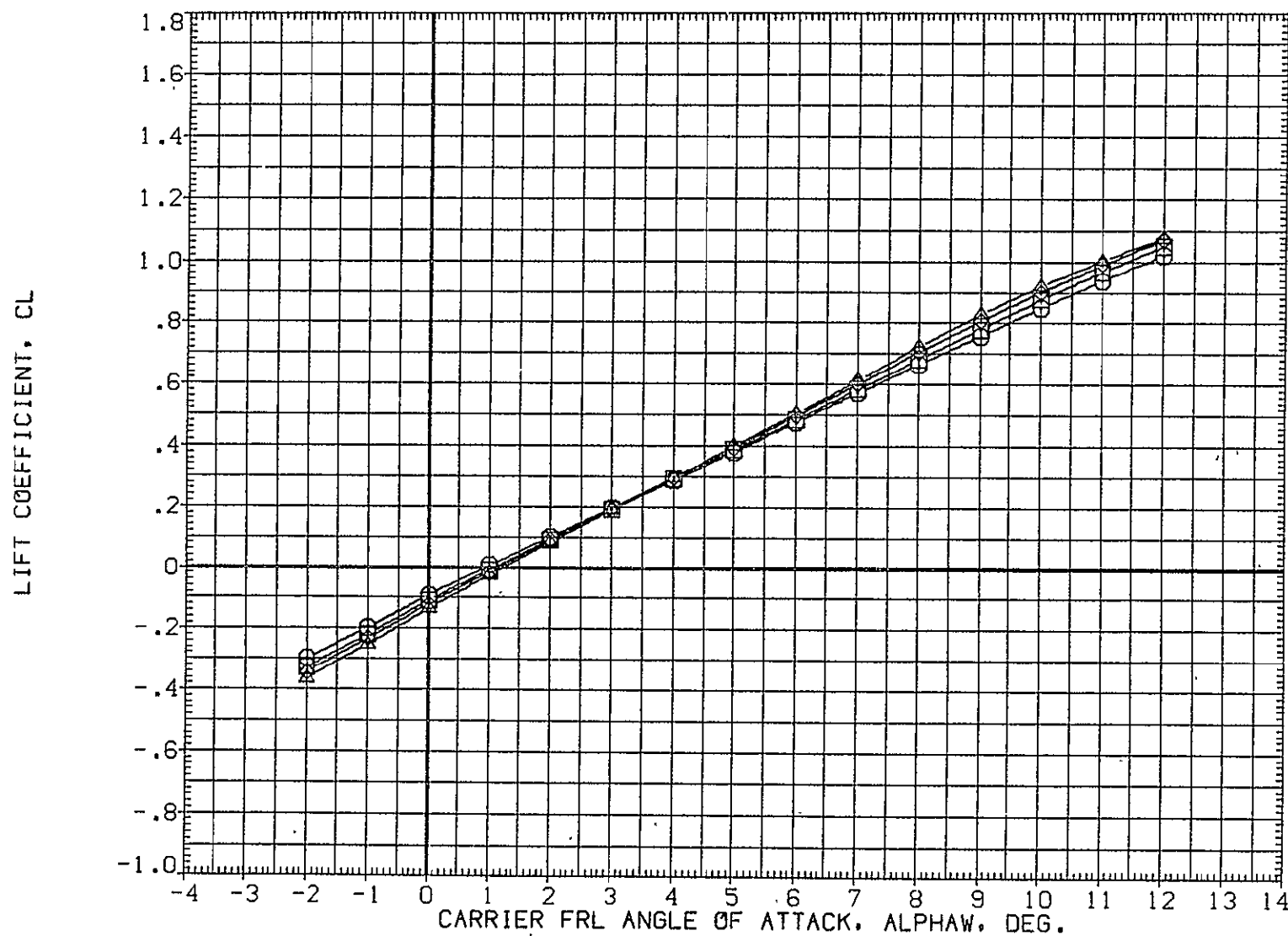


FIG. 41 747+ORB(8 DEG)+TIP FINS+STD SPD BRK, FLAPS UP LAUNCH, (S=-2)

TOTAL

SYMBOL	MACH	PARAMETRIC VALUES			
○	.300	BETA	.000	STAB	-2.000
□	.500	RUD-U	.000	RUD-L	.000
◇	.600	ELV-IB	.000	ELV-OB	3.000
△	.700	S1-2	.000	S3-4	45.000
		S5-6	20.000	IORB	7.850

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

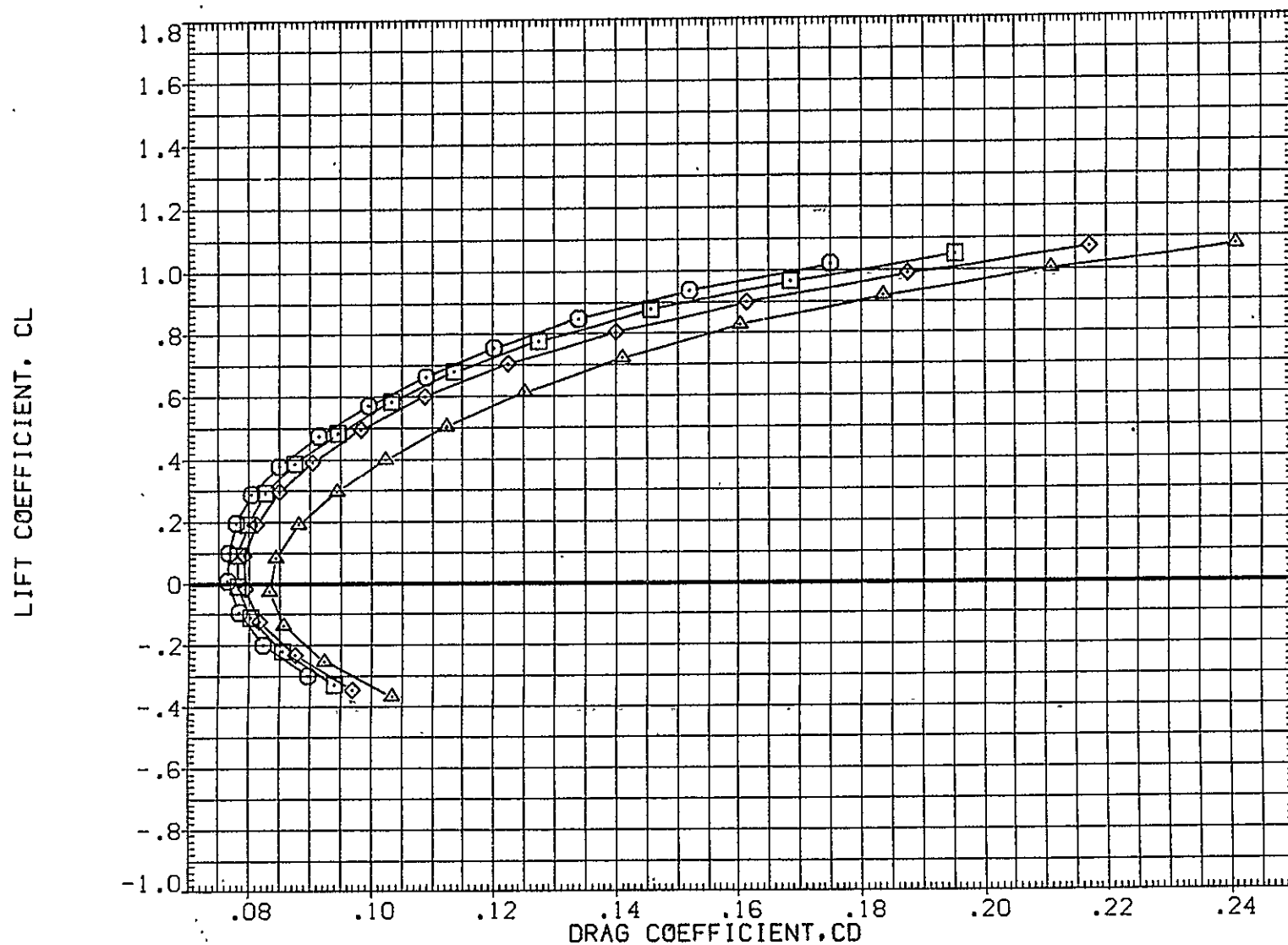


FIG. 41 747+ORB(8 DEG)+TIP FINS+STD SPD BRK, FLAPS UP LAUNCH, (S=-2)

TOTAL

CA5 K1 F0 H15.6 V9.1 (PLUS. 0RB TC5 AT38.2)(RGM084)

SYMBOL	MACH	PARAMETRIC VALUES				REFERENCE INFORMATION		
○	.300	BETA	.000	STAB	-2.000	SREF	5500.0000	50.FT.
□	.500	RUD-U	.000	RUD-L	.000	LREF	327.8000	IN.
◇	.600	ELV-IB	.000	ELV-OB	3.000	BREF	2348.0000	IN.
△	.700	S1-2	.000	S3-4	45.000	XMRP	1339.9100	IN. XC
		S5-6	20.000	ICRB	7.850	YMRP	.0000	IN. YC
						ZMRP	190.7500	IN. ZC
						SCALE	.0300	

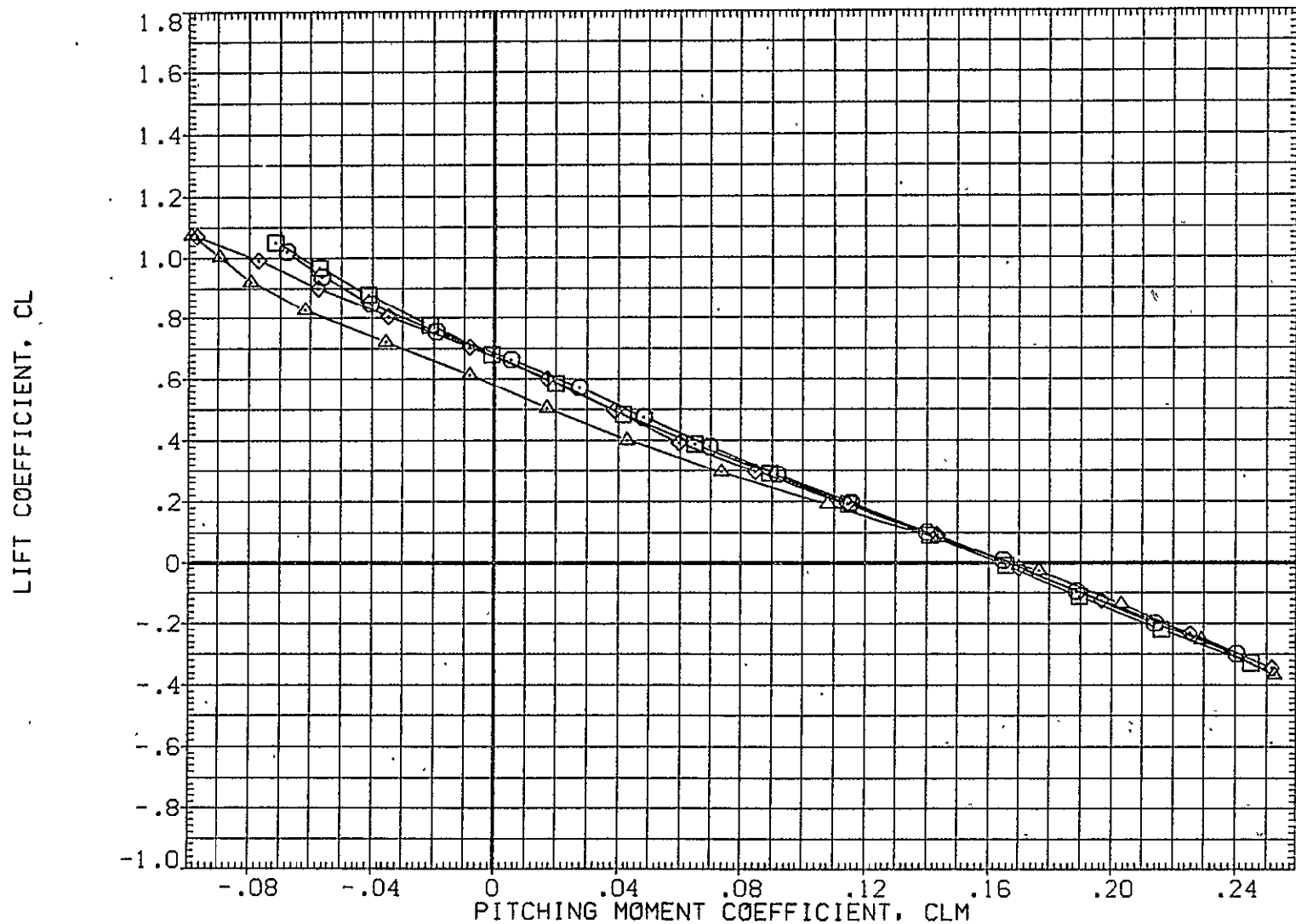


FIG. 41 747+0RB(8 DEG)+TIP FINS+STD SPD BRK, FLAPS UP LAUNCH, (S=-2)

TOTAL

SYMBOL
 ○
 □
 ◇
 △

MACH

BETA
 .300
 .500
 .600
 .700

RUD-U
 RUD-L
 ELV-IB
 S1-2
 S5-6

PARAMETRIC VALUES

.000
 .000
 .000
 .000
 20.000

STAB
 RUD-L
 ELV-OB
 S3-4
 IORB

-2.000
 .000
 3.000
 45.000
 7.850

REFERENCE INFORMATION

SREF 5500.0000 SQ.FT.
 LREF 327.8000 IN.
 BREF 2348.0000 IN.
 XMRP 1339.9100 IN. XC
 YMRP .0000 IN. YC
 ZMRP 190.7500 IN. ZC
 SCALE .0300

CARRIER FRL ANGLE OF ATTACK, ALPHAW, DEG.

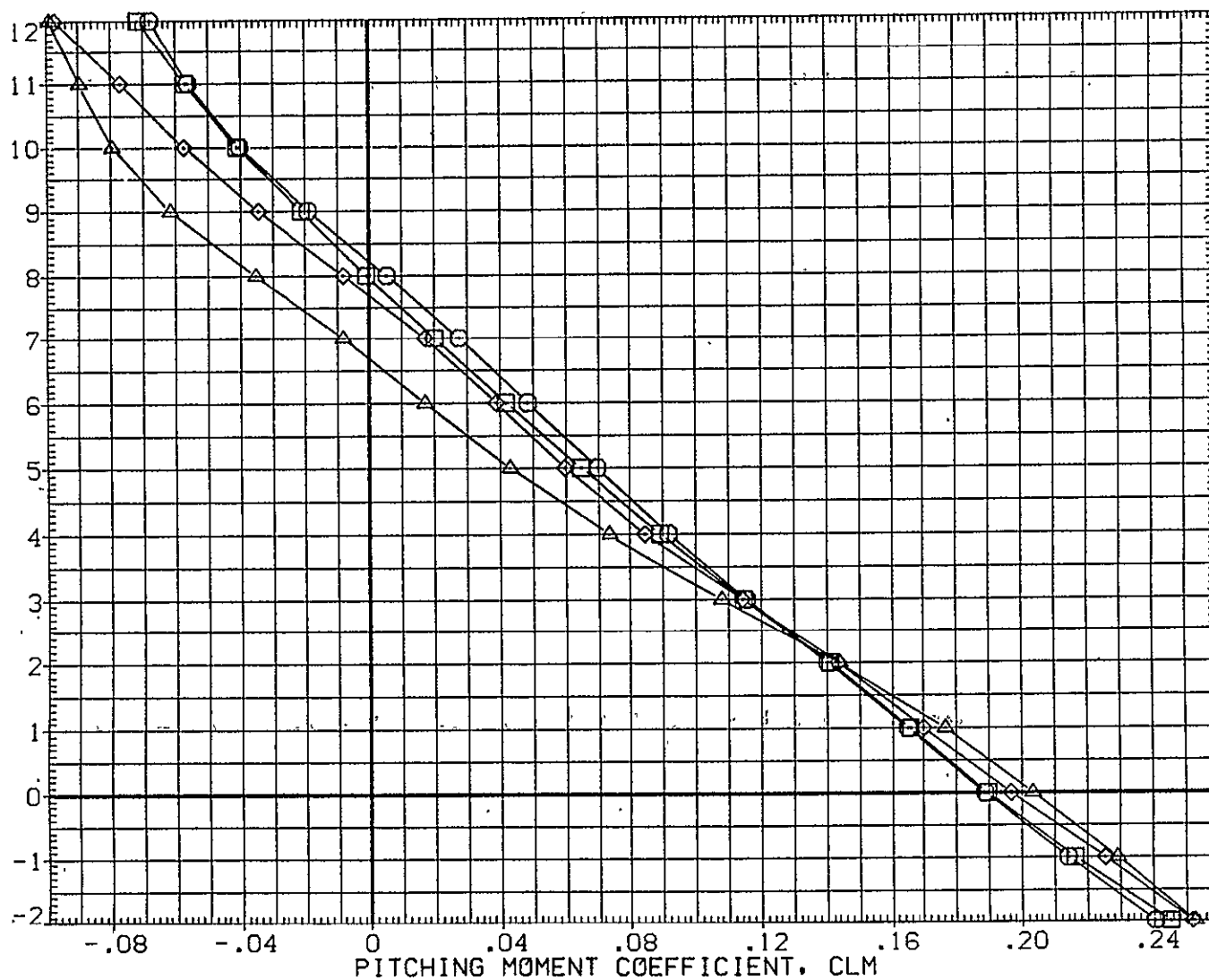


FIG. 41 747+ORB(8 DEG)+TIP FINS+STD SPD BRK, FLAPS UP LAUNCH, (S=-2)

TOTAL

CA5 K1 F0 H15.6 V9.1 MINUS ORB TC5 AT38.2 (BGM084)

SYMBOL
○
□
◇
△

MACH

.300
.500
.600
.700

BETA
RUD-U
ELV-1B
S1-2
S5-6

PARAMETRIC VALUES

.000 STAB -2.000
.000 RUD-L .000
.000 ELV-0B 3.000
.000 S3-4 45.000
20.000 10RB 7.850

REFERENCE INFORMATION

SREF 5500.0000 SQ.F
LREF 327.8000 IN.
BREF 2348.0000 IN.
XMRP 1339.9100 IN. XC
YMRP .0000 IN. YC
ZMRP 190.7500 IN. ZC
SCALE .0300

INCREMENTAL LIFT FORCE COEFFICIENT (STABILITY AXIS), DCL

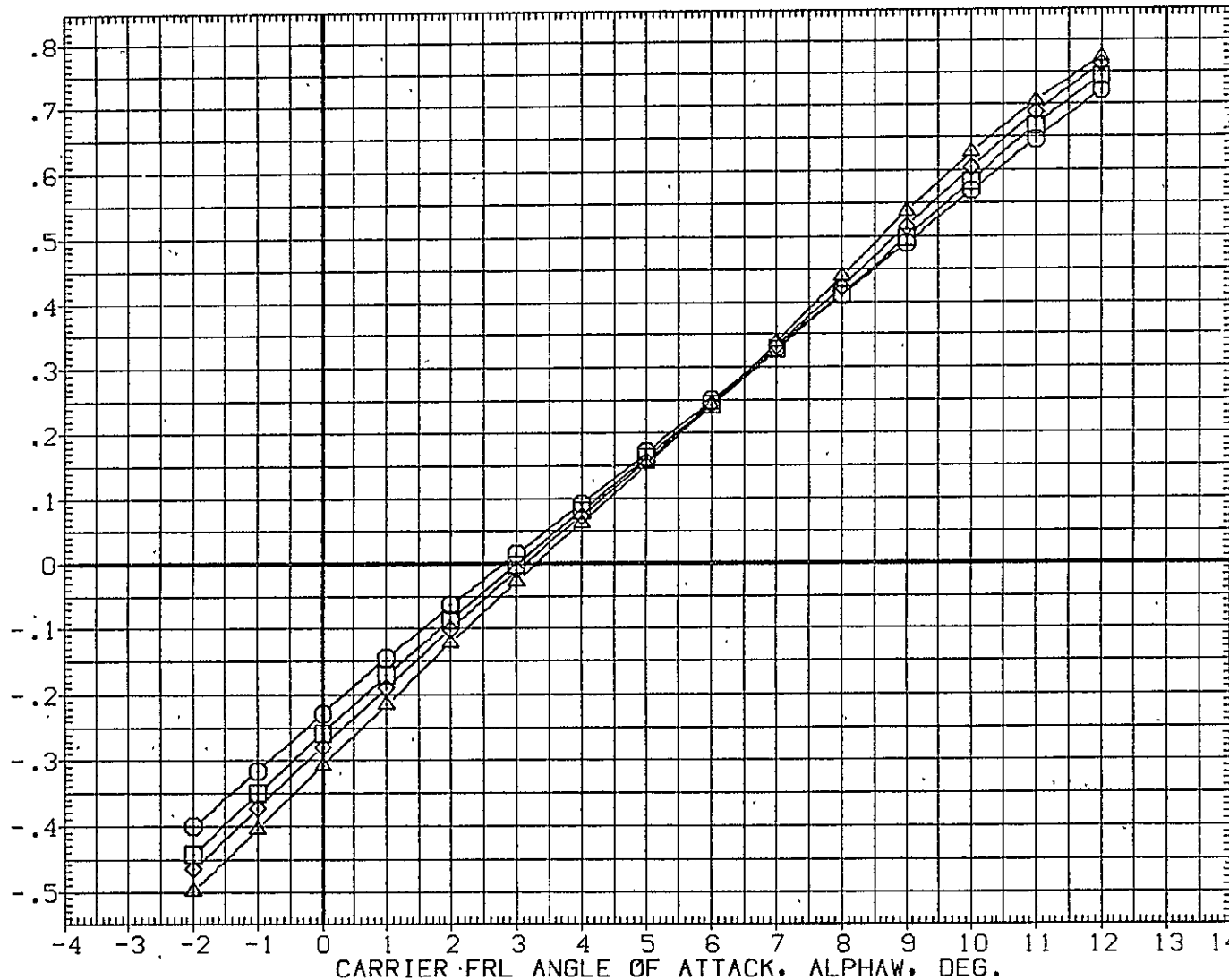


FIG. 42 747+0RB(8 DEG)+TIP FINS+STD SPD BRK, FLAPS UP LAUNCH, (S=-2)

747

SYMBOL

MACH

PARAMETRIC VALUES

REFERENCE INFORMATION

○
□
◇
△

.300

BETA

.000

STAB

-2.000

SREF

5500.0000

SQ.FT.

.500

RUD-U

.000

RUD-L

.000

LREF

327.8000

IN.

.600

ELV-1B

.000

ELV-0B

3.000

BREF

2348.0000

IN.

.700

S1-2

.000

S3-4

45.000

XMRP

1339.9100

IN. XC

S5-6

20.000

10RB

7.850

YMRP

.0000

IN. YC

ZMRP

190.7500

IN. ZC

SCALE

.0300

INCREMENTAL LIFT FORCE COEFFICIENT(STABILITY AXIS), DCL

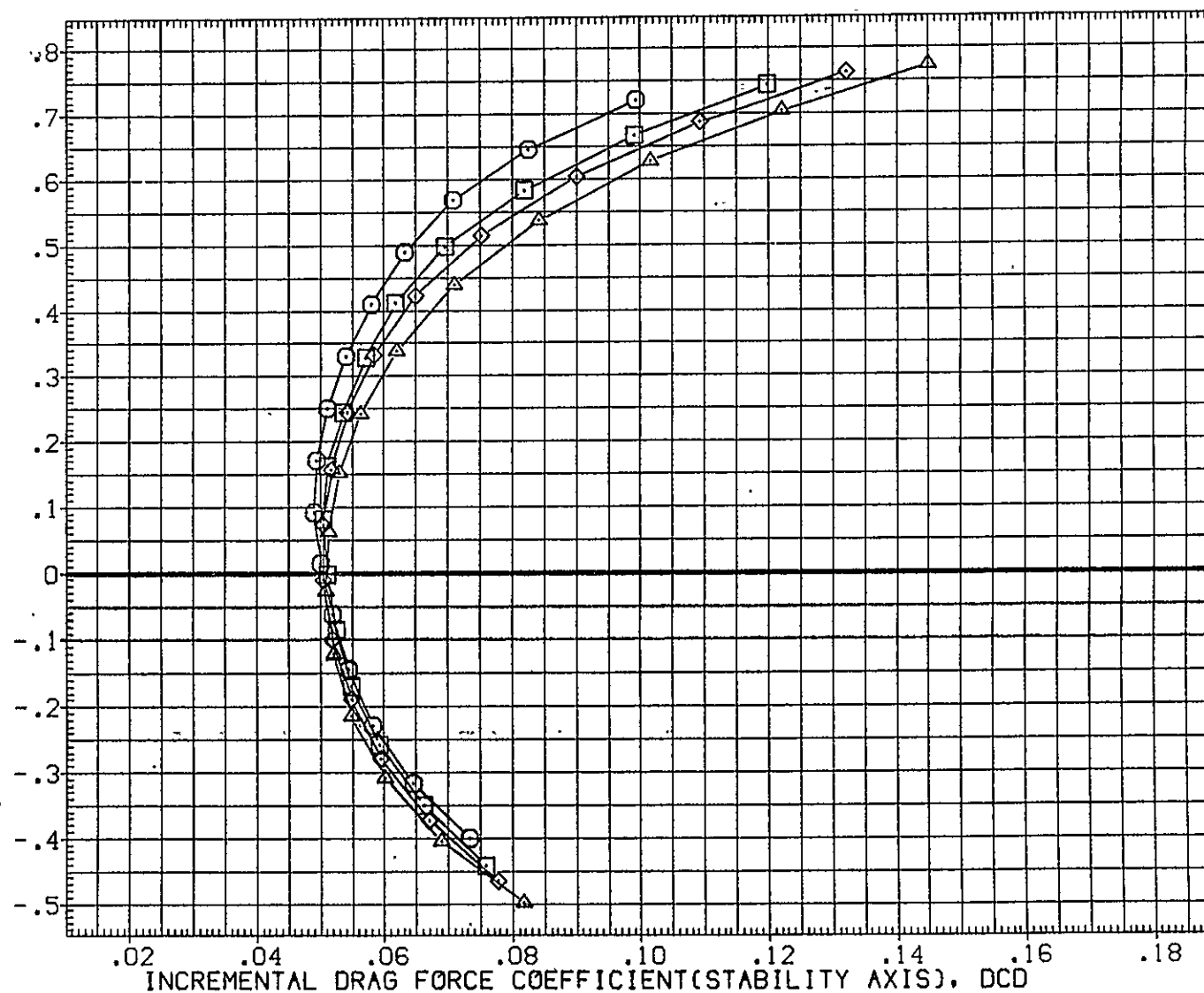


FIG. 42 747+ORB(8 DEG)+TIP FINS+STD SPD BRK, FLAPS UP LAUNCH, (S=-2)

747

CA5 K1 F0 H15.6 V9.1 MINUS ORB TC5 AT38.2 (BGM084)

SYMBOL	MACH	PARAMETRIC VALUES			
○	.300	BETA	.000	STAB	-2.000
□	.500	RUD-U	.000	RUD-L	.000
◇	.600	ELV-IB	.000	ELV-OB	3.000
△	.700	S1-2	.000	S3-4	45.000
		S5-6	20.000	IORB	7.850

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

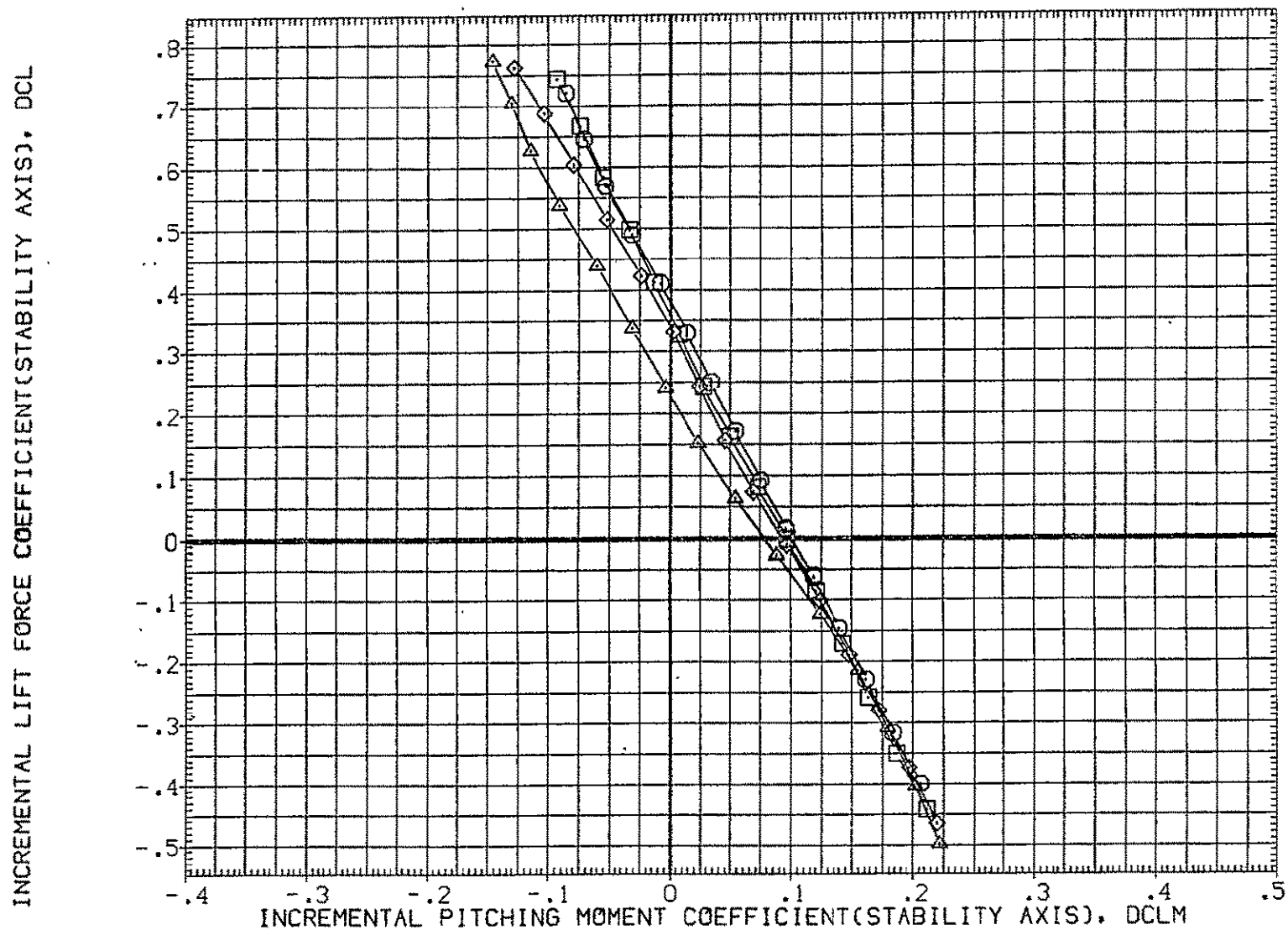


FIG. 42 747+ORB(8 DEG)+TIP FINS+STD SPD BRK, FLAPS UP LAUNCH, (S=-2)

747

SYMBOL

○
□
◇
△

MACH

.300
.500
.600
.700

BETA
RUD-U
ELV-1B
S1-2
S5-6

PARAMETRIC VALUES

.000 STAB -2.000
.000 RUD-L .000
.000 ELV-0B 3.000
.000 S3-4 45.000
20.000 10RB 7.850

REFERENCE INFORMATION

SREF 5500.0000 SQ.FT.
LREF 327.8000 IN.
BREF 2348.0000 IN.
XMRP 1339.9100 IN. XC
YMRP .0000 IN. YC
ZMRP 190.7500 IN. ZC
SCALE .0300

CARRIER FRL ANGLE OF ATTACK, ALPHA, DEG.

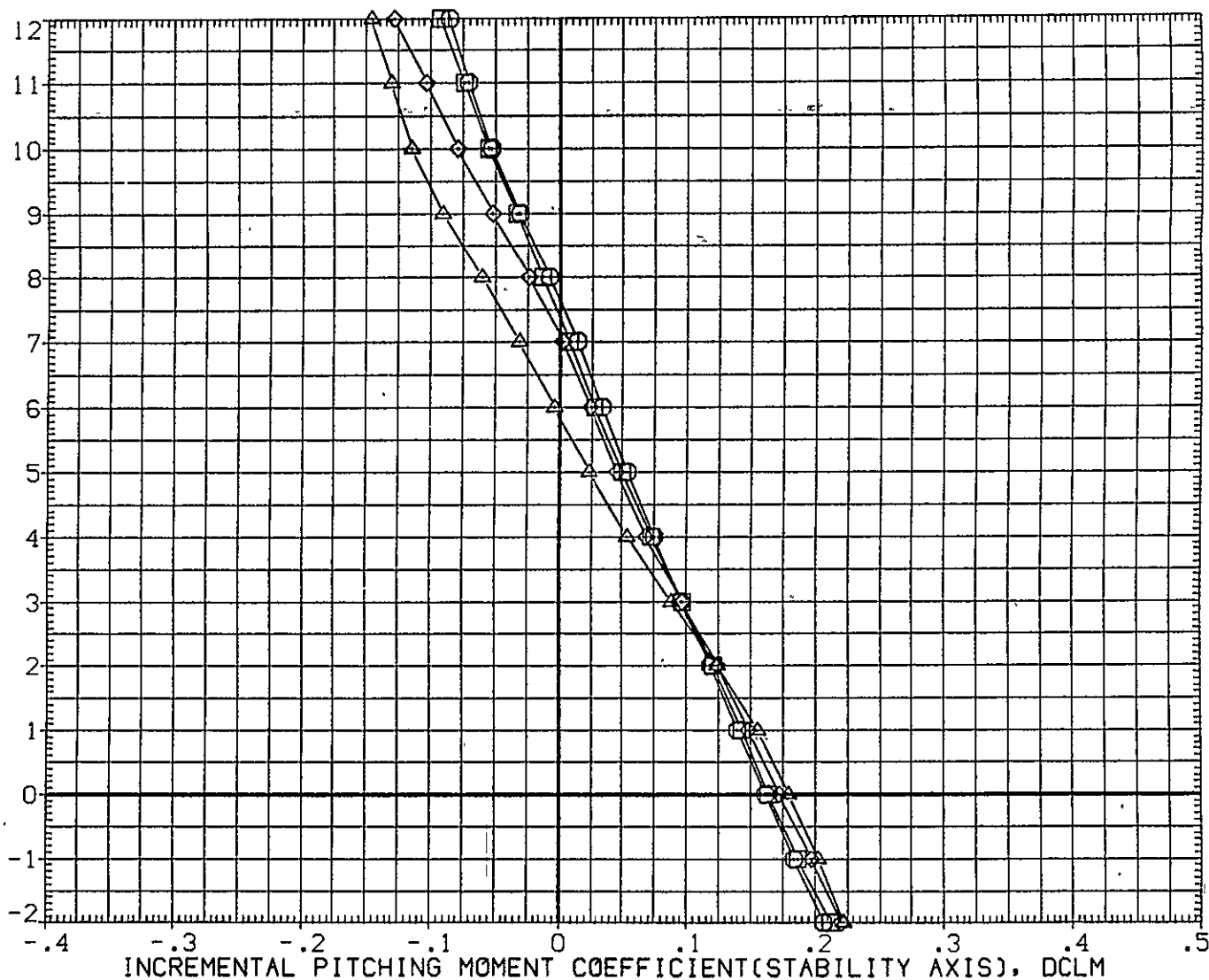


FIG. 42 747+0RB(8 DEG)+TIP FINS+STD SPD BRK, FLAPS UP LAUNCH, (S=-2)

747

CA5 0RB TC5 AT38.2 (PRES. K1 FO H15.6 V9.1)(YGM084)

SYMBOL	MACH	PARAMETRIC VALUES				REFERENCE INFORMATION		
○	.300	BETA	.000	STAB	-2.000	SREF	2690.0000	50.FT.
□	.499	RUD-U	.000	RUD-L	.000	LREF	474.8100	IN.
◇	.599	ELV-1B	.000	ELV-0B	3.000	BREF	936.6800	IN.
△	.699	S1-2	.000	S3-4	45.000	XMRP	1109.0000	IN. X0
		S5-6	20.000	10RB	7.850	YMRP	.0000	IN. Y0
						ZMRP	375.0000	IN. Z0
						SCALE	.0300	

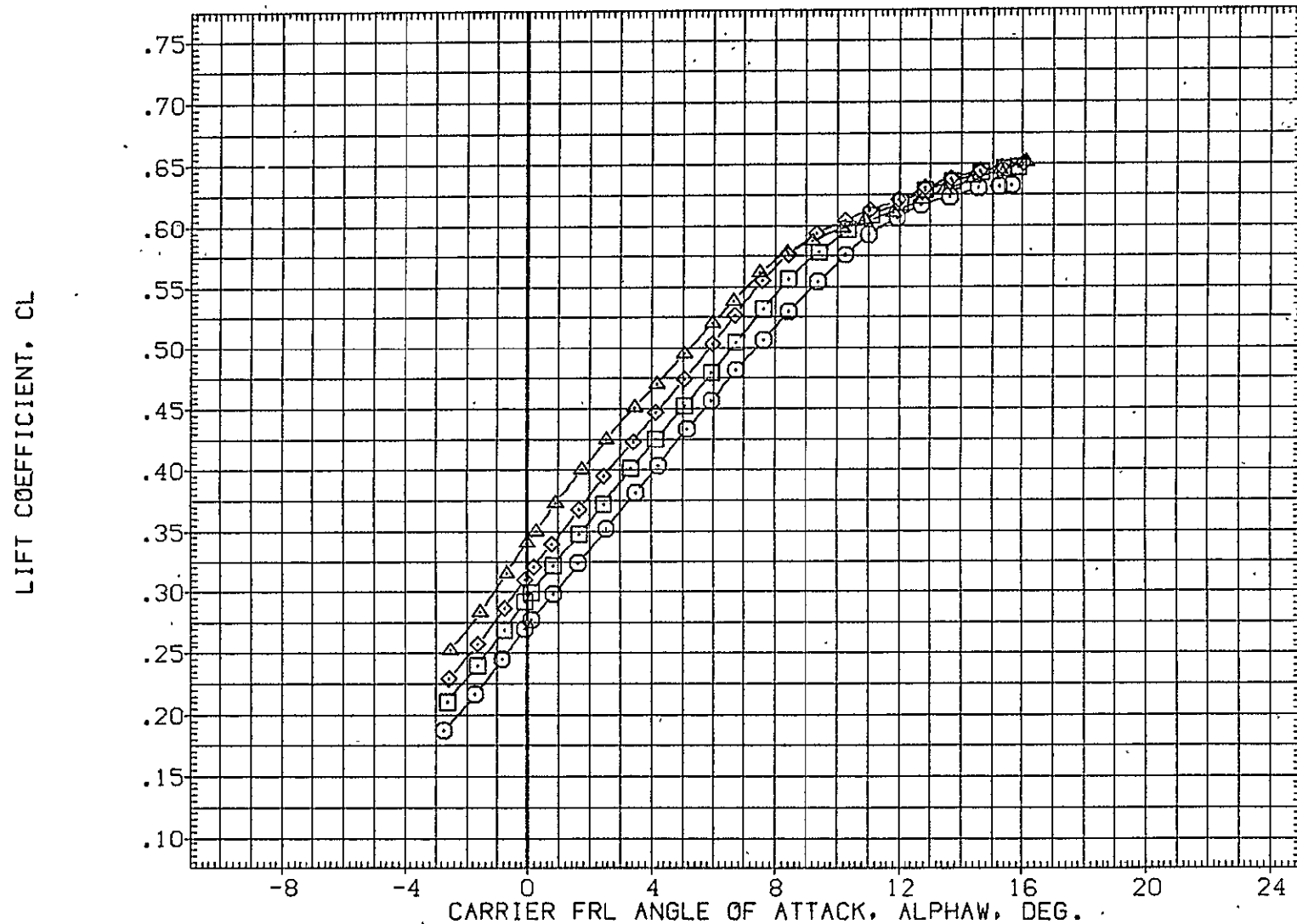


FIG. 43 747+0RB(8 DEG)+TIP FINS+STD SPD BRK, FLAPS UP LAUNCH, (S=-2)

0RB

CA5 ORB TC5 AT38.2 (PRES. K1 FO H15.6 V9.1)(YGM084)									
SYMBOL ○ □ ◇ △	MACH	PARAMETRIC VALUES							
	.300	BETA	.000	STAB	-2.000	REFERENCE INFORMATION			
	.499	RUD-U	.000	RUD-L	.000	SREF	2690.0000	SQ.FT.	
	.599	ELV-1B	.000	ELV-0B	3.000	LREF	474.8100	IN.	
	.699	S1-2	.000	S3-4	45.000	BREF	936.6800	IN.	
		S5-6	20.000	10RB	7.850	XMRP	1109.0000	IN. X0	
						YMRP	.0000	IN. Y0	
						ZMRP	375.0000	IN. Z0	
						SCALE	.0300		

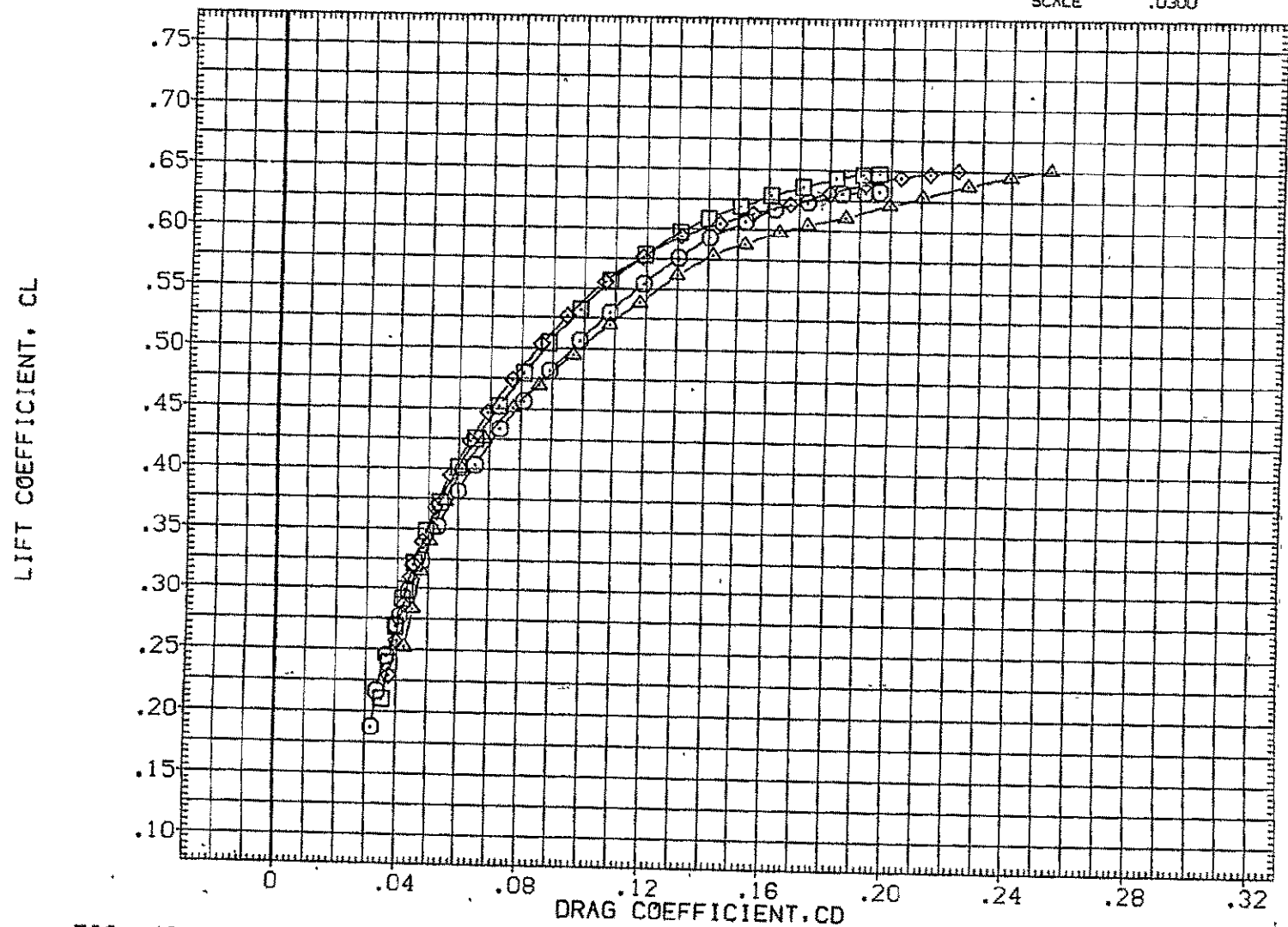


FIG. 43 747+ORB(8 DEG)+TIP FINS+STD SPD BRK, FLAPS UP LAUNCH, (S=-2)

ORB

CA5 ORB TC5 AT38.2 (PRES. K1 FO H15.6 V9.1)(YGM084)

SYMBOL	MACH	PARAMETRIC VALUES				REFERENCE INFORMATION		
○	.300	BETA	.000	STAB	-2.000	SREF	2690.0000	SQ.FT.
□	.499	RUD-U	.000	RUD-L	.000	LREF	474.8100	IN.
◇	.599	ELV-IB	.000	ELV-OB	3.000	BREF	936.6800	IN.
△	.699	S1-2	.000	S3-4	45.000	XMRP	1109.0000	IN. X0
		S5-6	20.000	IORB	7.850	YMRP	.0000	IN. Y0
						ZMRP	375.0000	IN. Z0
						SCALE	.0300	

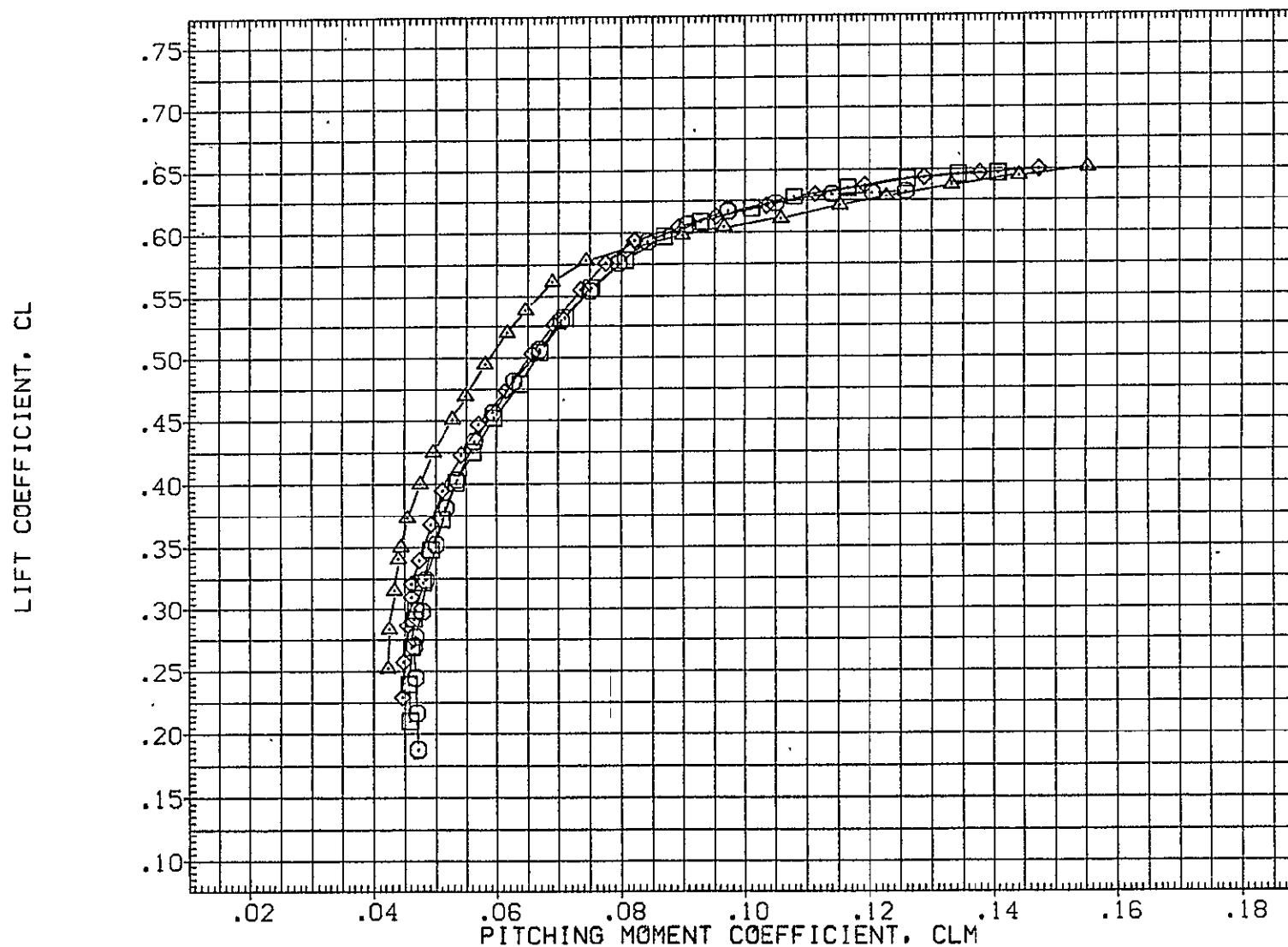


FIG. 43 747+ORB(8 DEG)+TIP FINS+STD SPD BRK, FLAPS UP LAUNCH, (S=-2)

ORB

SYMBOL	MACH	PARAMETRIC VALUES			
○	.300	BETA	.000	STAB	-2.000
□	.499	RUD-U	.000	RUD-L	.000
◇	.599	ELV-IB	.000	ELV-OB	3.000
△	.699	S1-2	.000	S3-4	45.000
		S5-6	20.000	IORB	7.850

REFERENCE INFORMATION		
SREF	2690.0000	SG.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN. X0
YMRP	.0000	IN. Y0
ZMRP	375.0000	IN. Z0
SCALE	.0300	

CARRIER FRL ANGLE OF ATTACK, ALPHA, DEG.

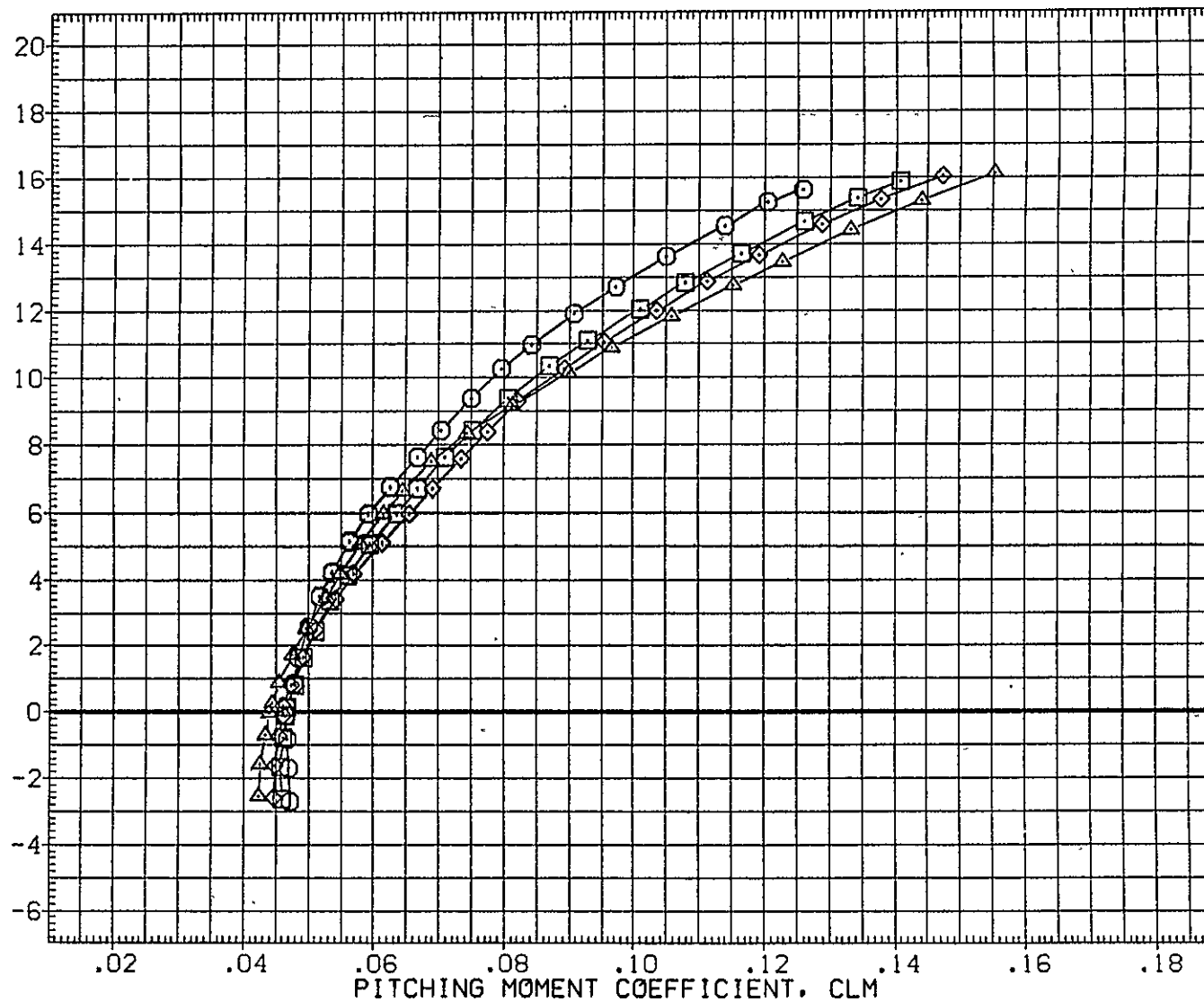


FIG. 43 747+0RB(8 DEG)+TIP FINS+STD SPD BRK, FLAPS UP LAUNCH, (S=-2)

0RB

CA5 K1 F0 H15.6 V9.1 (PLUS. ORB TC5 AT38.2)(RGM085)

SYMBOL
○
□
◇
△

MACH

.300

.500

.600

.700

BETA

RUD-U

ELV-1B

S1-2

S5-6

PARAMETRIC VALUES

.000

.000

10.000

.000

20.000

STAB

RUD-L

ELV-OB

S3-4

10RB

1.000

.000

13.000

45.000

7.850

REFERENCE INFORMATION

SREF	5500.0000	SQ,FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XM RP	1339.9100	IN. XC
YM RP	.0000	IN. YC
ZM RP	190.7500	IN. ZC
SCALE	.0300	

LIFT COEFFICIENT, CL

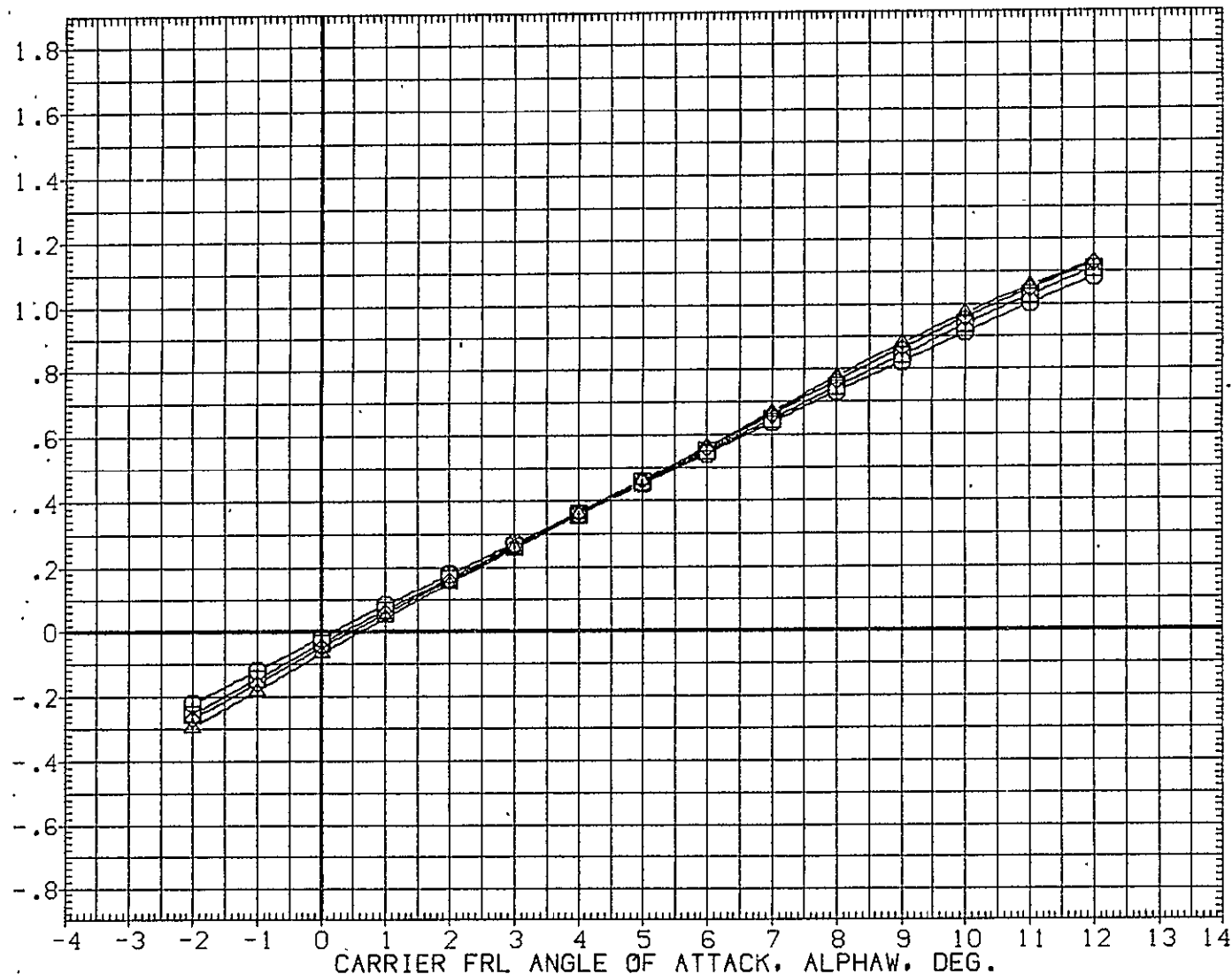


FIG. 44 747+ORB(8 DEG)+TIP FINS+STD SPD BRK, FLAPS UP LAUNCH, ELEV=10 DEG TOTAL

SYMBOL	MACH	PARAMETRIC VALUES				REFERENCE INFORMATION		
○	.300	BETA	.000	STAB	1.000	SREF	5500.0000	SQ.FT.
□	.500	RUD-U	.000	RUD-L	.000	LREF	327.8000	IN.
◇	.600	ELV-1B	10.000	ELV-0B	13.000	BREF	2348.0000	IN.
△	.700	S1-2	.000	S3-4	45.000	XMRP	1339.9100	IN. XC
		S5-6	20.000	IORB	7.850	YMRP	.0000	IN. YC
						ZMRP	190.7500	IN. ZC
						SCALE	.0300	

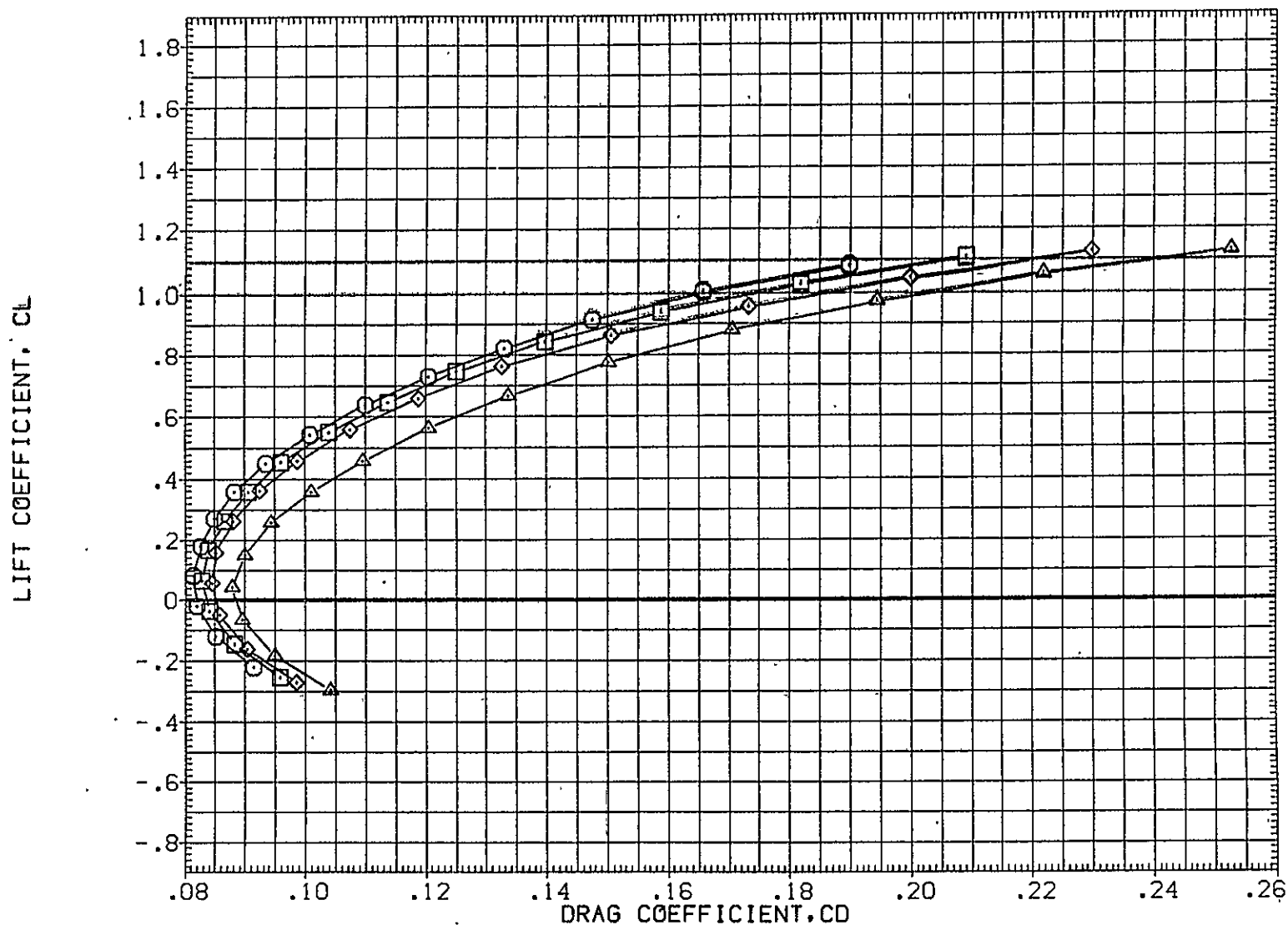


FIG. 44 747+ORB(8 DEG)+TIP FINS+STD SPD BRK, FLAPS UP LAUNCH, ELEV=10 DEG TOTAL

CA5 K1 FO H15.6 V9.1 (PLUS. 0RB TC5 AT38.2)(RGM085)

SYMBOL	MACH	PARAMETRIC VALUES				REFERENCE INFORMATION		
○	.300	BETA	.000	STAB	1.000	SREF	5500.0000	SQ.FT.
□	.500	RUD-U	.000	RUD-L	.000	LREF	327.8000	IN.
◇	.600	ELV-IB	10.000	ELV-OB	13.000	BREF	2348.0000	IN.
△	.700	S1-2	.000	S3-4	45.000	XMRP	1339.9100	IN. AC
		S5-6	20.000	IORB	7.850	YMRP	.0000	IN. YC
						ZMRP	190.7500	IN. ZC
						SCALE	.0300	

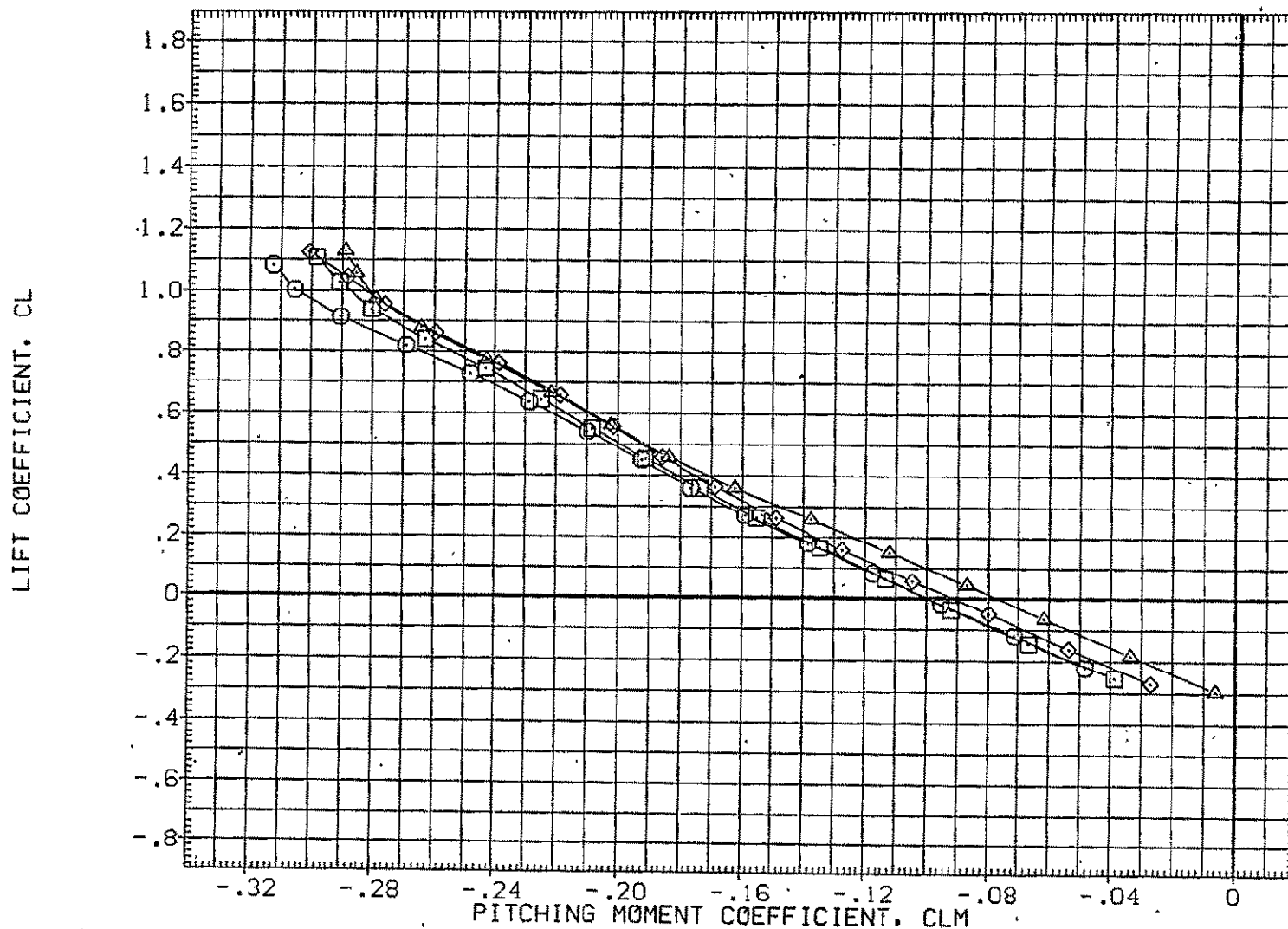


FIG. 44 747+0RB(8 DEG)+TIP FINS+STD SPD BRK,FLAPS UP LAUNCH,ELEV=10 DEG TOTAL

SYMBOL

MACH

PARAMETRIC VALUES

REFERENCE INFORMATION

○
□
◇
△

.300	BETA	.000	STAB	1.000
.500	RUD-U	.000	RUD-L	.000
.600	ELV-1B	10.000	ELV-0B	13.000
.700	S1-2	.000	S3-4	45.000
	S5-6	20.000	10RB	7.850

SREF	5500.0000	SQ.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

CARRIER FRL ANGLE OF ATTACK, ALPHAW, DEG.

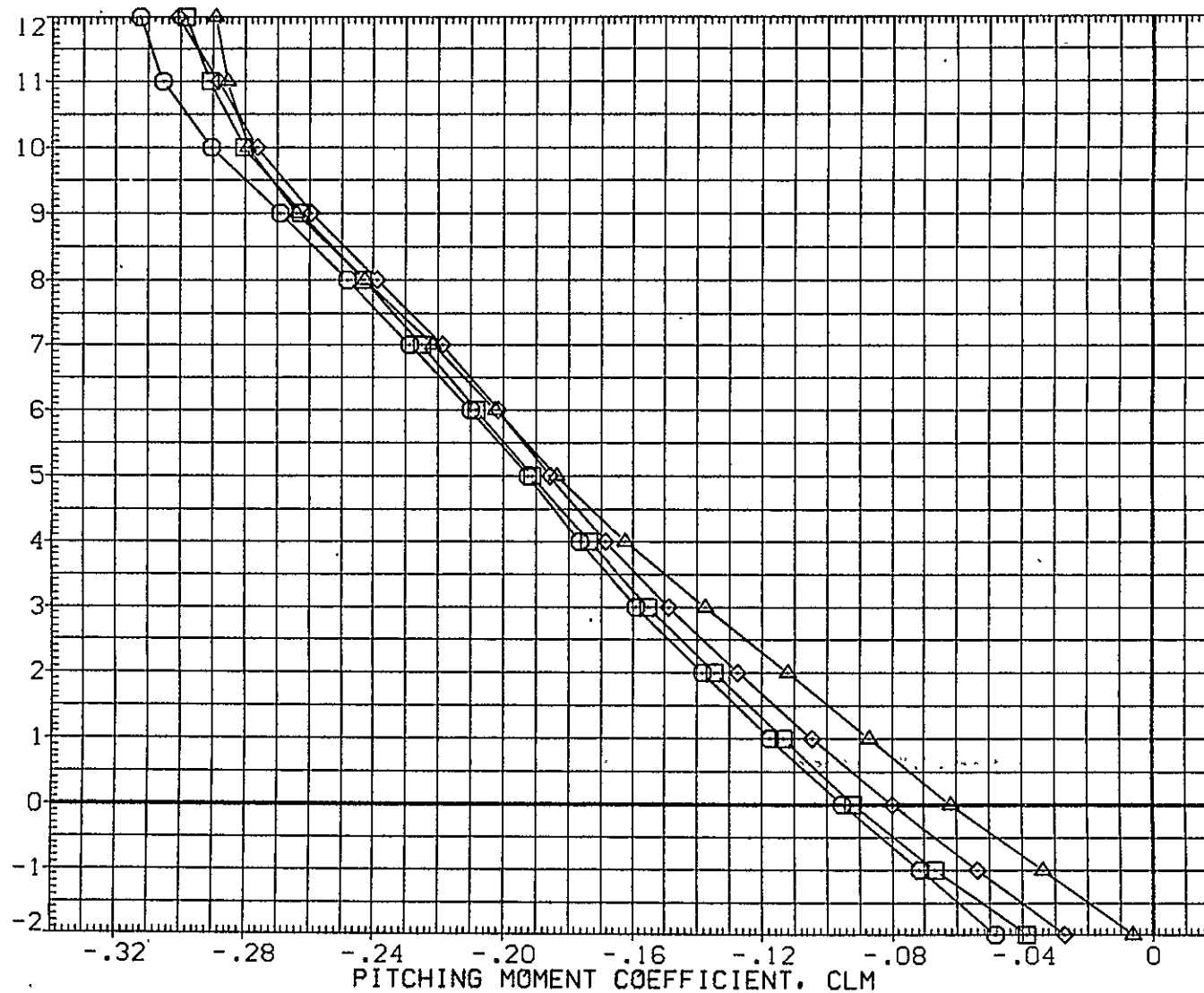


FIG. 44 747+0RB(8 DEG)+TIP FINS+STD SPD BRK, FLAPS UP LAUNCH, ELEV=10 DEG TOTAL
PAGE 176

CA5 K1 FO H15.6 V9.1 MINUS 0RB TC5 AT38.2 (BGM085)

SYMBOL
○
□
◇
△

MACH	PARAMETRIC VALUES			
.300	BETA	.000	STAB	1.000
.500	RUD-U	.000	RUD-L	.000
.600	ELV-1B	10.000	ELV-0B	13.000
.700	S1-2	.000	S3-4	45.000
	S5-6	20.000	10RB	7.850

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

INCREMENTAL LIFT FORCE COEFFICIENT(STABILITY AXIS), DCL

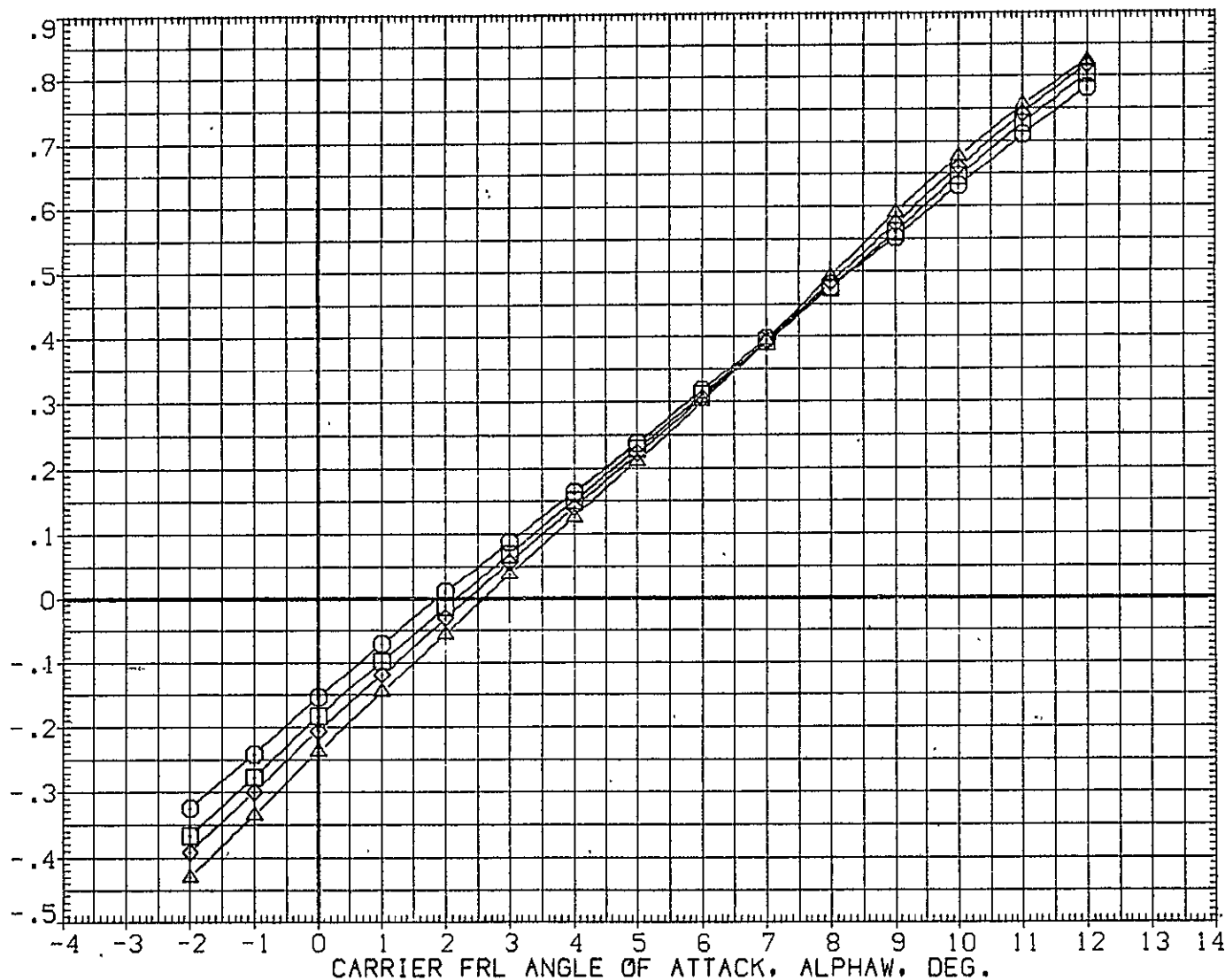


FIG. 45 747+0RB(8 DEG)+TIP FINS+STD SPD BRK, FLAPS UP LAUNCH, ELEV=10 DEG

747

SYMBOL	MACH	PARAMETRIC VALUES			
○	.300	BETA	.000	STAB	1.000
□	.500	RUD-U	.000	RUD-L	.000
◇	.600	ELV-1B	10.000	ELV-OB	13.000
△	.700	S1-2	.000	S3-4	45.000
		S5-6	20.000	10RB	7.850

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

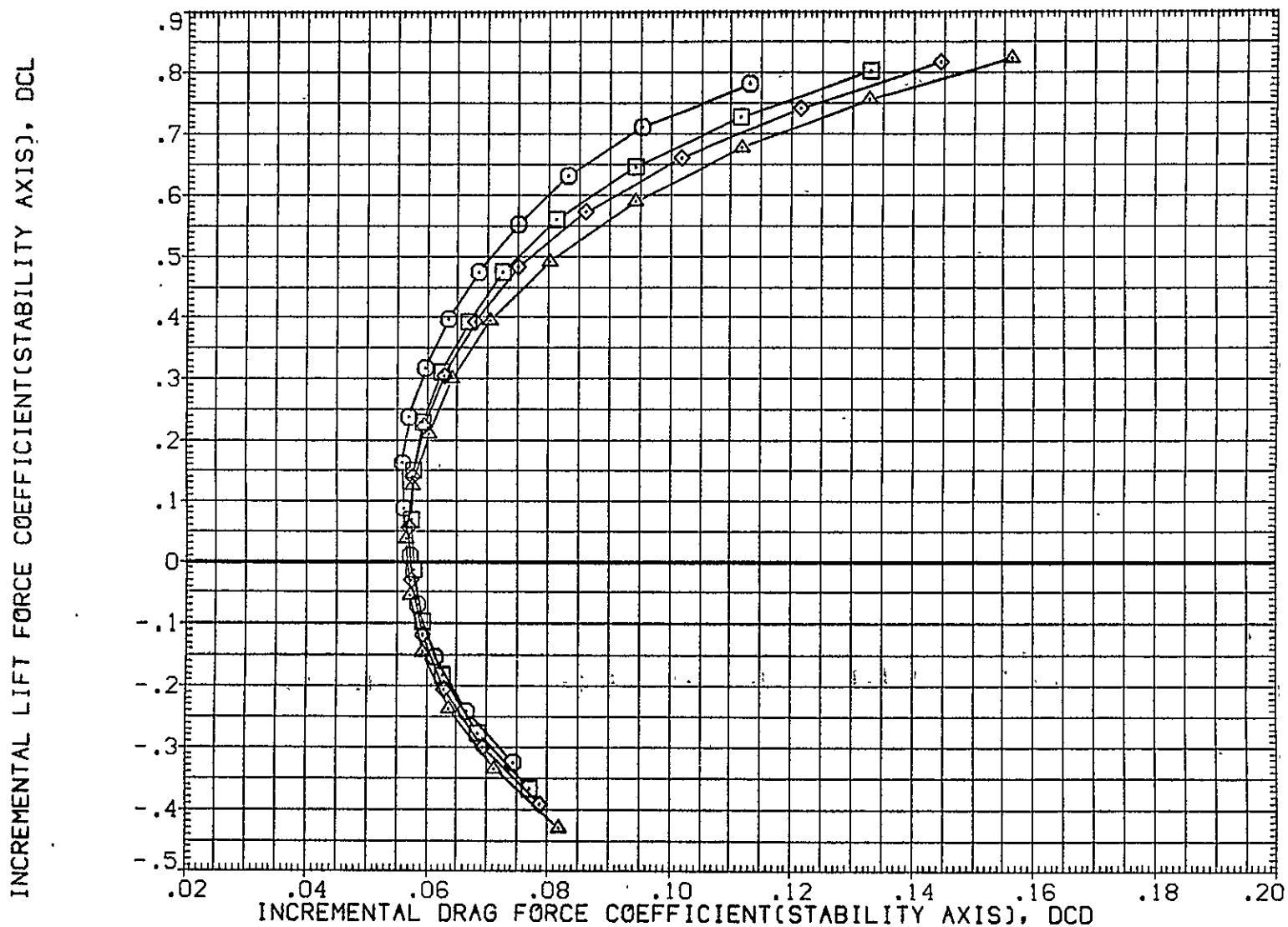


FIG. 45 747+ORB(8 DEG)+TIP FINS+STD SPD BRK, FLAPS UP LAUNCH, ELEV=10 DEG

747

CA5 K1 F0 H15.6 V9.1 MINUS ORB TC5 AT38.2 (BGM085)

SYMBOL	MACH	PARAMETRIC VALUES			
○	.300	BETA	.000	STAB	1.000
□	.500	RUD-U	.000	RUD-L	.000
◇	.600	ELV-1B	10.000	ELV-0B	13.000
△	.700	S1-2	.000	S3-4	45.000
		S5-6	20.000	IORB	7.850

REFERENCE INFORMATION		
SREF	5500.0000	50.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

INCREMENTAL LIFT FORCE COEFFICIENT(STABILITY AXIS), DCL

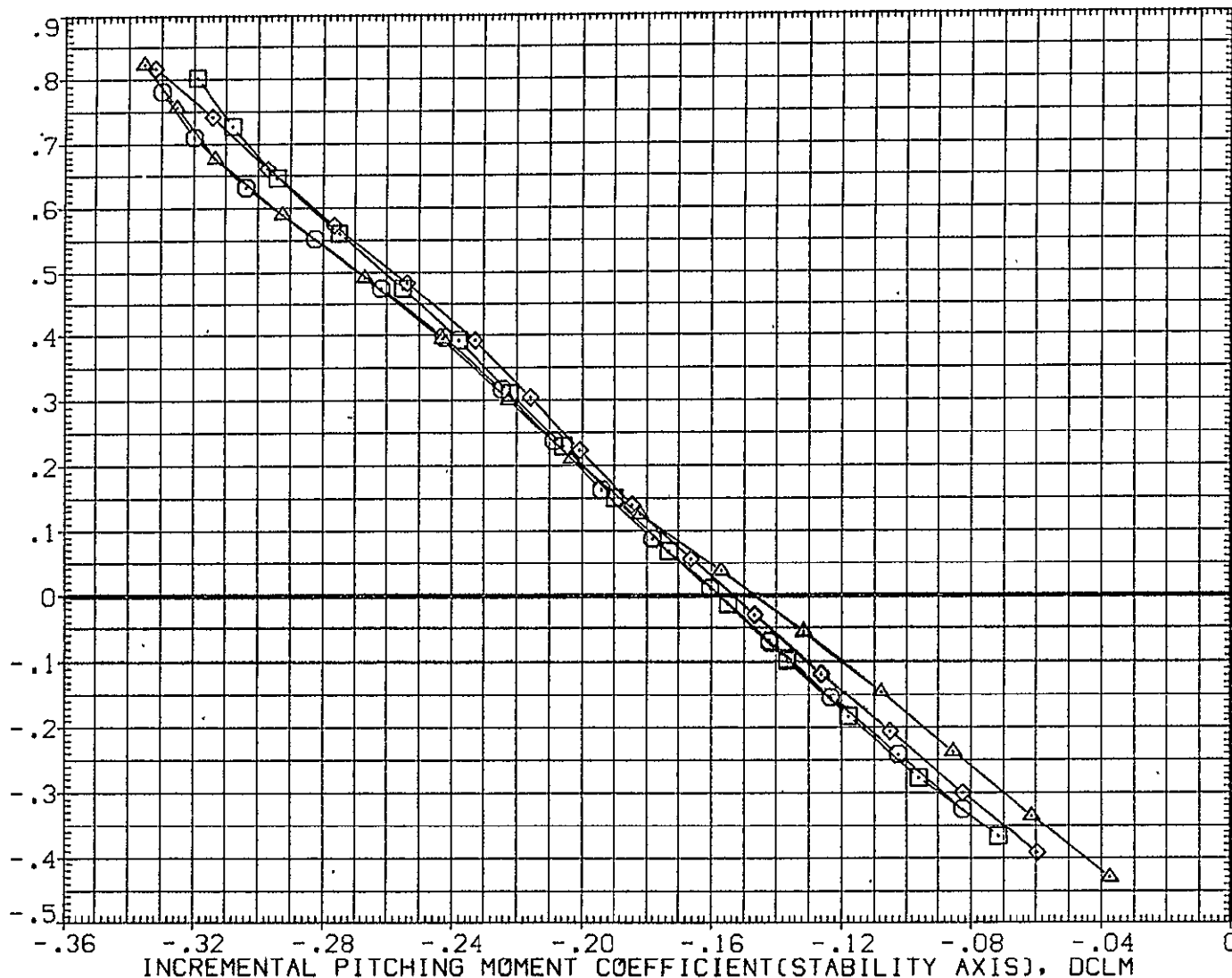


FIG. 45 747+ORB(8 DEG)+TIP FINS+STD SPD BRK, FLAPS UP LAUNCH, ELEV=10 DEG

747

SYMBOL	MACH	PARAMETRIC VALUES			
○	.300	BETA	.000	STAB	1.000
□	.500	RUD-U	.000	RUD-L	.000
◇	.600	ELV-18	10.000	ELV-08	13.000
△	.700	S1-2	.000	S3-4	45.000
		S5-6	20.000	10RB	7.850

REFERENCE INFORMATION		
SREF	5500.0000	50.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

CARRIER FRL ANGLE OF ATTACK, ALPHAW, DEG.

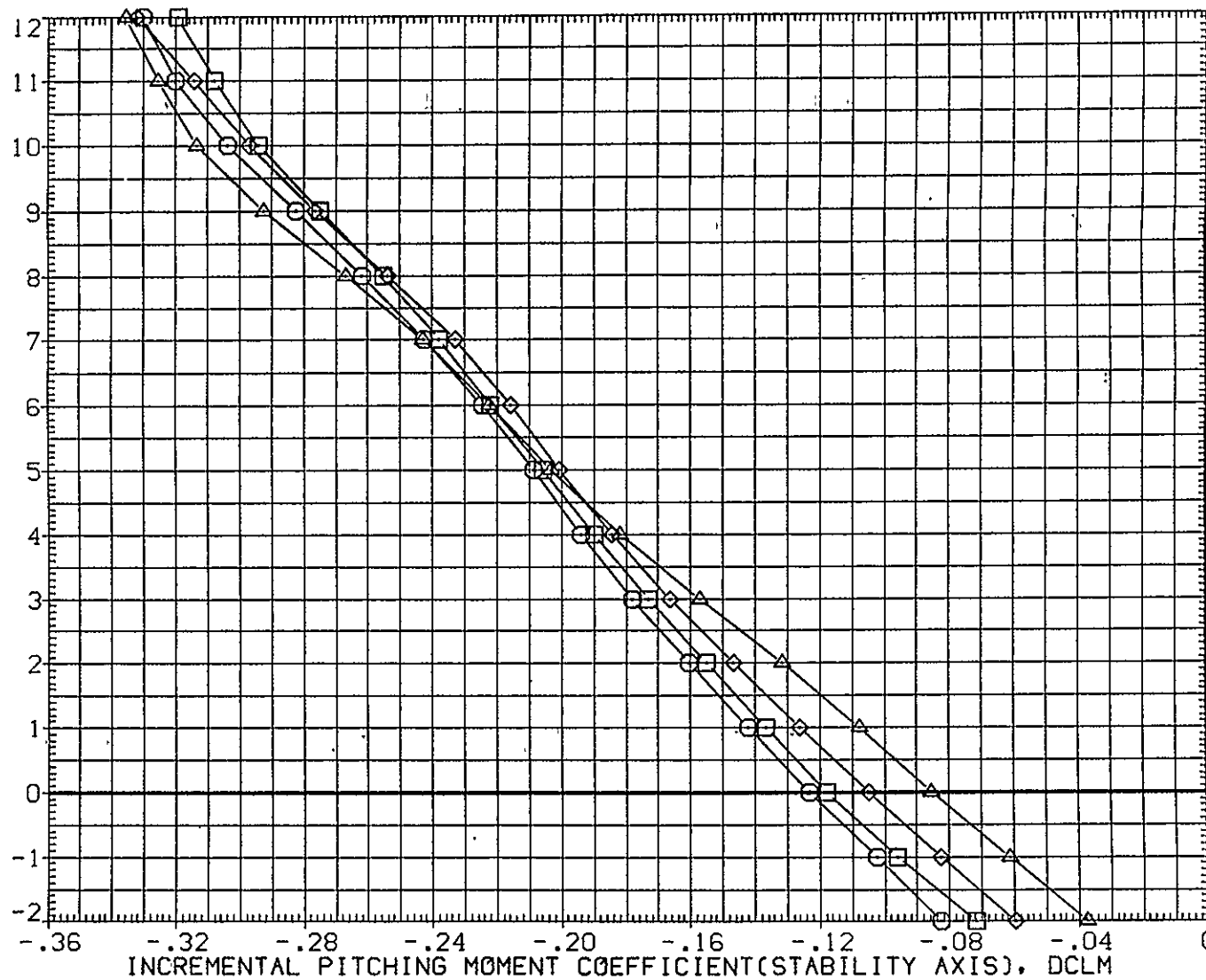


FIG. 45 747+0RB(8 DEG)+TIP FINS+STD SPD BRK, FLAPS UP LAUNCH, ELEV=10 DEG

747

CA5 0RB TC5 AT38.2 (PRES. K1 F0 H15.6 V9.1)(YGM085)

SYMBOL	MACH	PARAMETRIC VALUES				REFERENCE INFORMATION	
○	.300	BETA	.000	STAB	1.000	SREF	2690.0000 SQ.FT.
□	.500	RUD-U	.000	RUD-L	.000	LREF	474.8100 IN.
◇	.601	ELV-1B	10.000	ELV-0B	13.000	BREF	936.6800 IN.
△	.700	S1-2	.000	S3-4	45.000	XMRP	1109.0000 IN. X0
		S5-6	20.000	10RB	7.850	YMRP	.0000 IN. Y0
						ZMRP	375.0000 IN. Z0
						SCALE	.0300

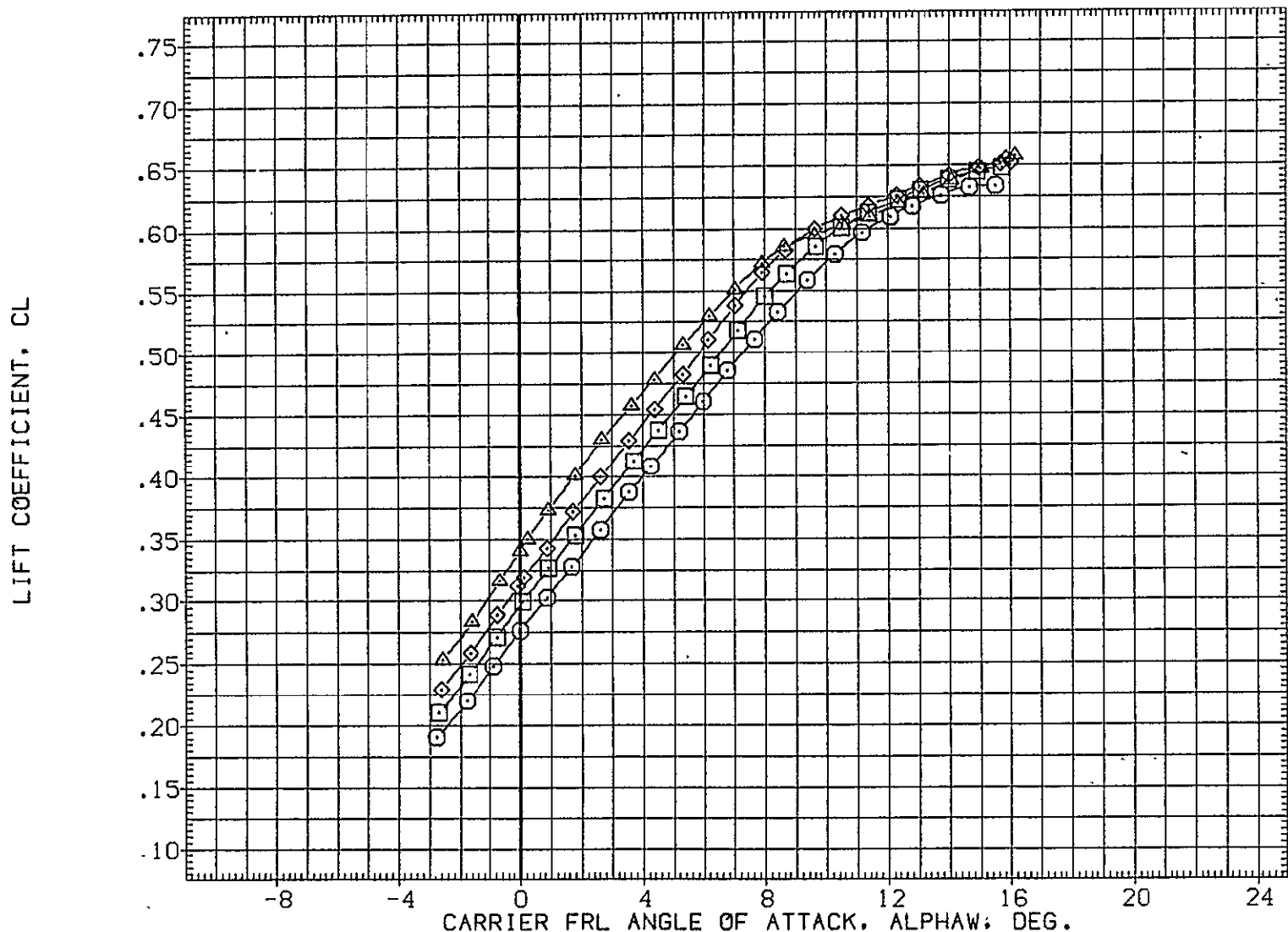


FIG. 46 747+0RB(8 DEG)+TIP FINS+STD SPD BRK,FLAPS UP LAUNCH,ELEV=10 DEG 0RB

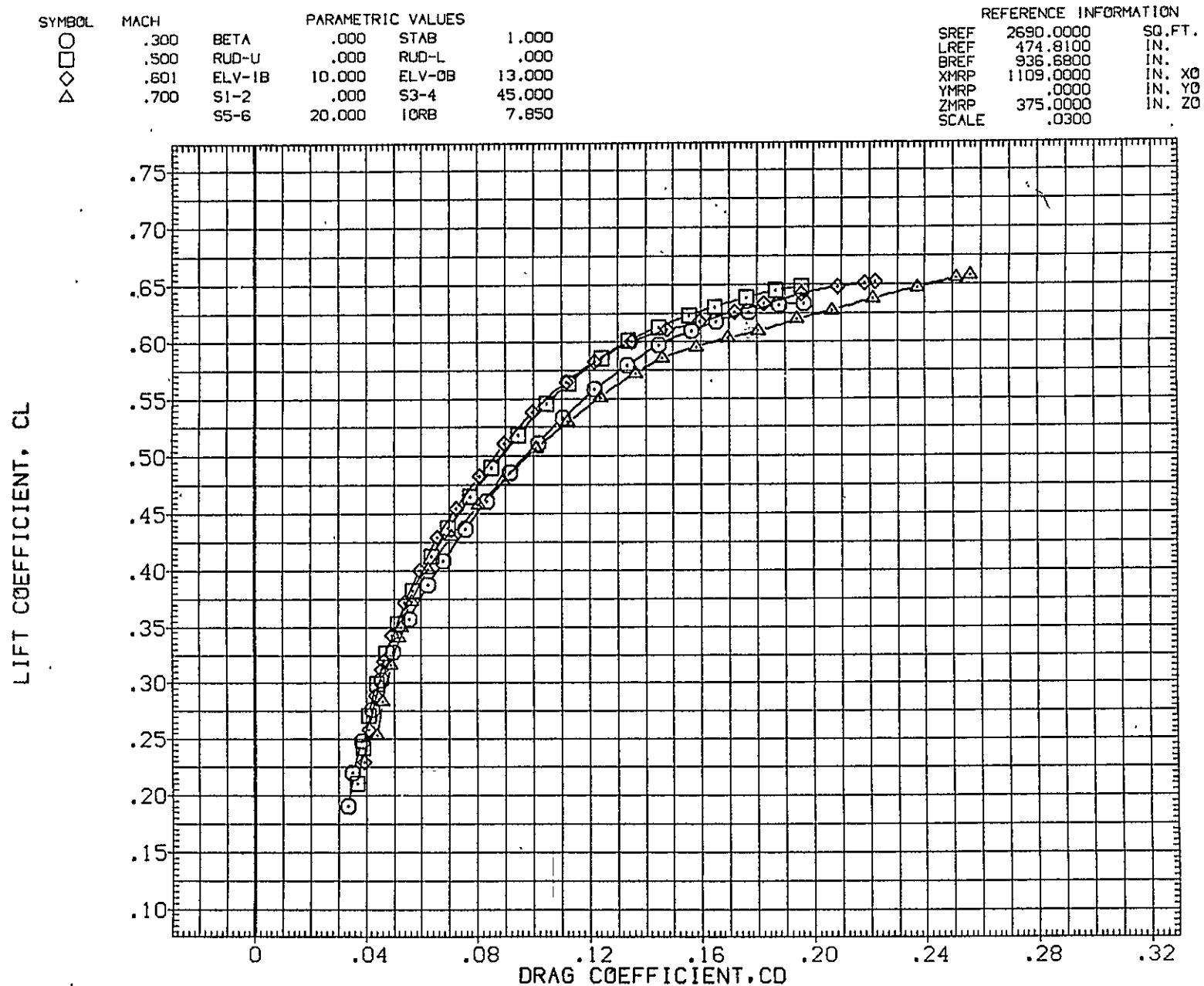


FIG. 46 747+ORB(8 DEG)+TIP FINS+STD SPD BRK, FLAPS UP LAUNCH, ELEV=10 DEG ORB

CA5 ORB TC5 AT38.2 (PRES. K1 FO H15.6 V9.1)(YGM085)

SYMBOL
○
□
◇
△

MACH
.300
.500
.601
.700

BETA
RUD-U
ELV-1B
S1-2
S5-6

PARAMETRIC VALUES
.000
.000
10.000
.000
20.000

STAB
RUD-L
ELV-0B
S3-4
10RB

1.000
.000
13.000
45.000
7.850

REFERENCE INFORMATION

SREF 2690.0000 SQ.FT.
LREF 474.8100 IN.
BREF 936.6800 IN.
XMRP 1109.0000 IN. X0
YMRP .0000 IN. Y0
ZMRP 375.0000 IN. Z0
SCALE .0300

LIFT COEFFICIENT, CL

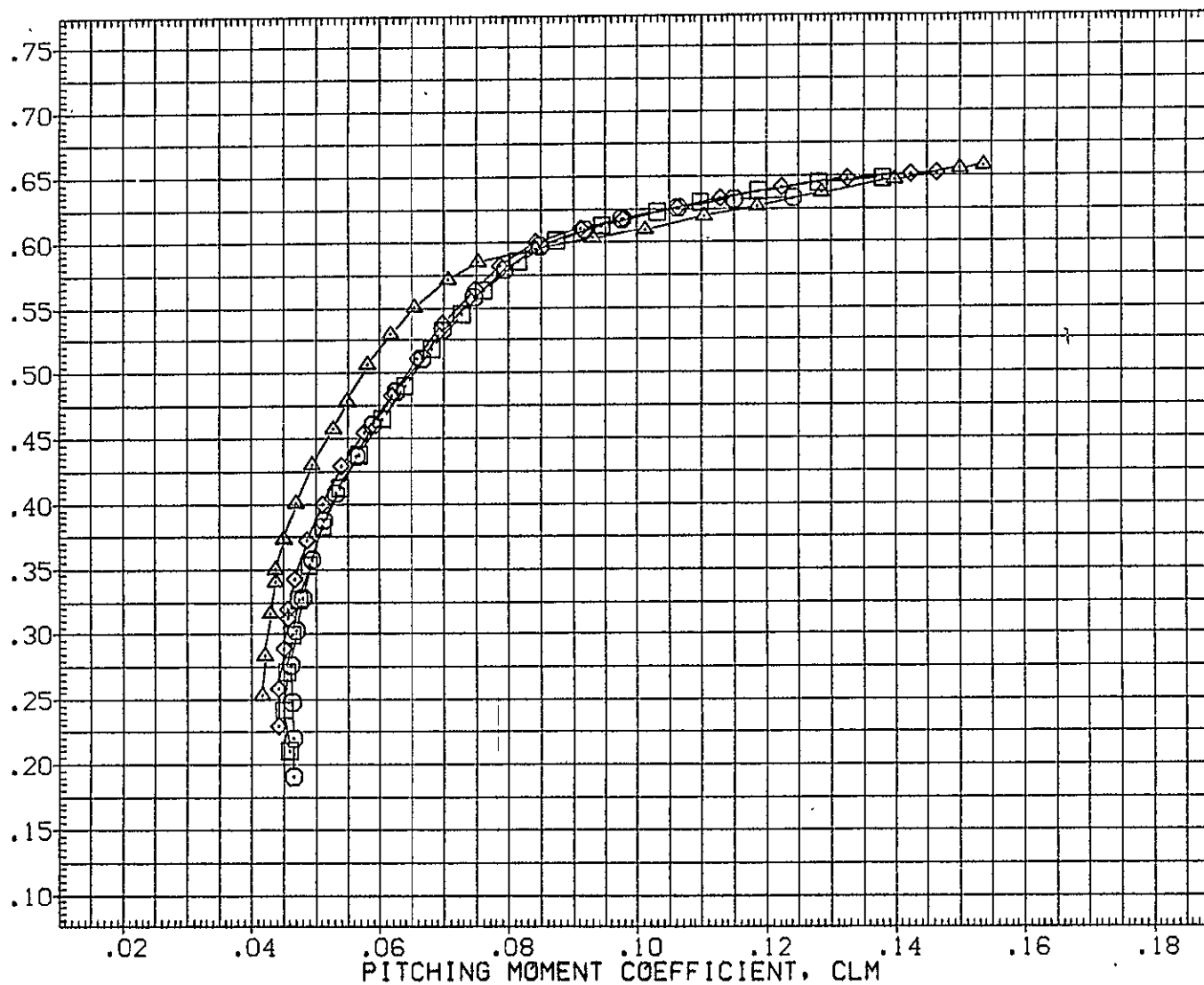


FIG. 46 747+ORB(8 DEG)+TIP FINS+STD SPD BRK, FLAPS UP LAUNCH, ELEV=10 DEG ORB

SYMBOL	MACH	PARAMETRIC VALUES			
○	.300	BETA	.000	STAB	1.000
□	.500	RUD-U	.000	RUD-L	.000
◇	.601	ELV-1B	10.000	ELV-0B	13.000
△	.700	S1-2	.000	S3-4	45.000
		S5-6	20.000	10RB	7.850

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN. X0
YMRP	.0000	IN. Y0
ZMRP	375.0000	IN. Z0
SCALE	.0300	

CARRIER FRL ANGLE OF ATTACK, ALPHA, DEG.

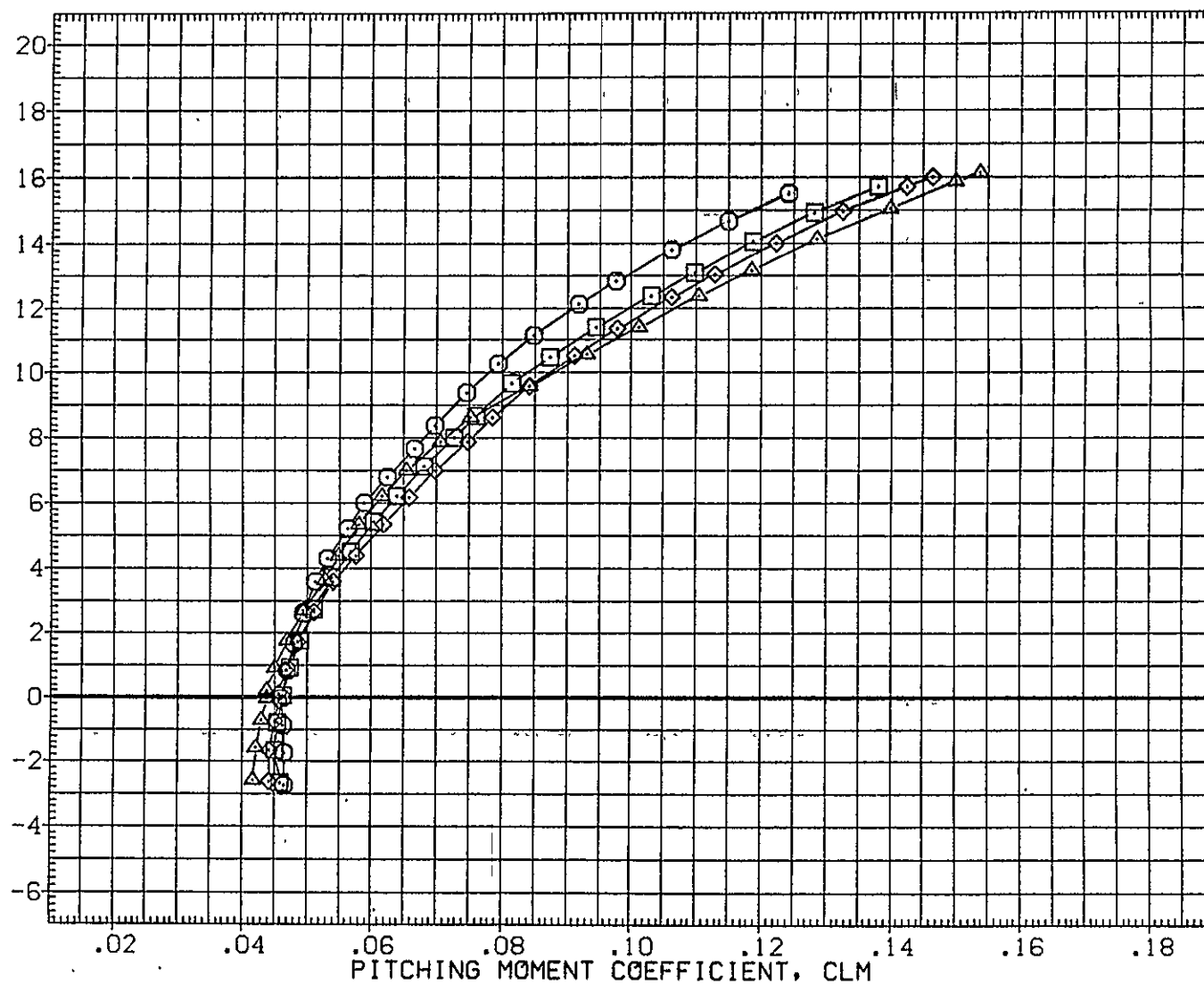


FIG. 46 747+0RB(8 DEG)+TIP FINS+STD SPD BRK, FLAPS UP LAUNCH, ELEV=10 DEG 0RB

CA5 K1 F0 H15.6 V9.1 (PLUS. ORB TC5 AT38.2)(RGM087)

SYMBOL

○
□

MACH

.500
.600

PARAMETRIC VALUES

BETA	.000	STAB	1.000
RUD-U	.000	ELV-1B	.000
ELV-0B	3.000	S1-2	.000
S3-4	45.000	S5-6	20.000
ICRB	7.850	ORBELV	5.000

REFERENCE INFORMATION

SREF	5500.0000	50.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

LIFT COEFFICIENT, CL

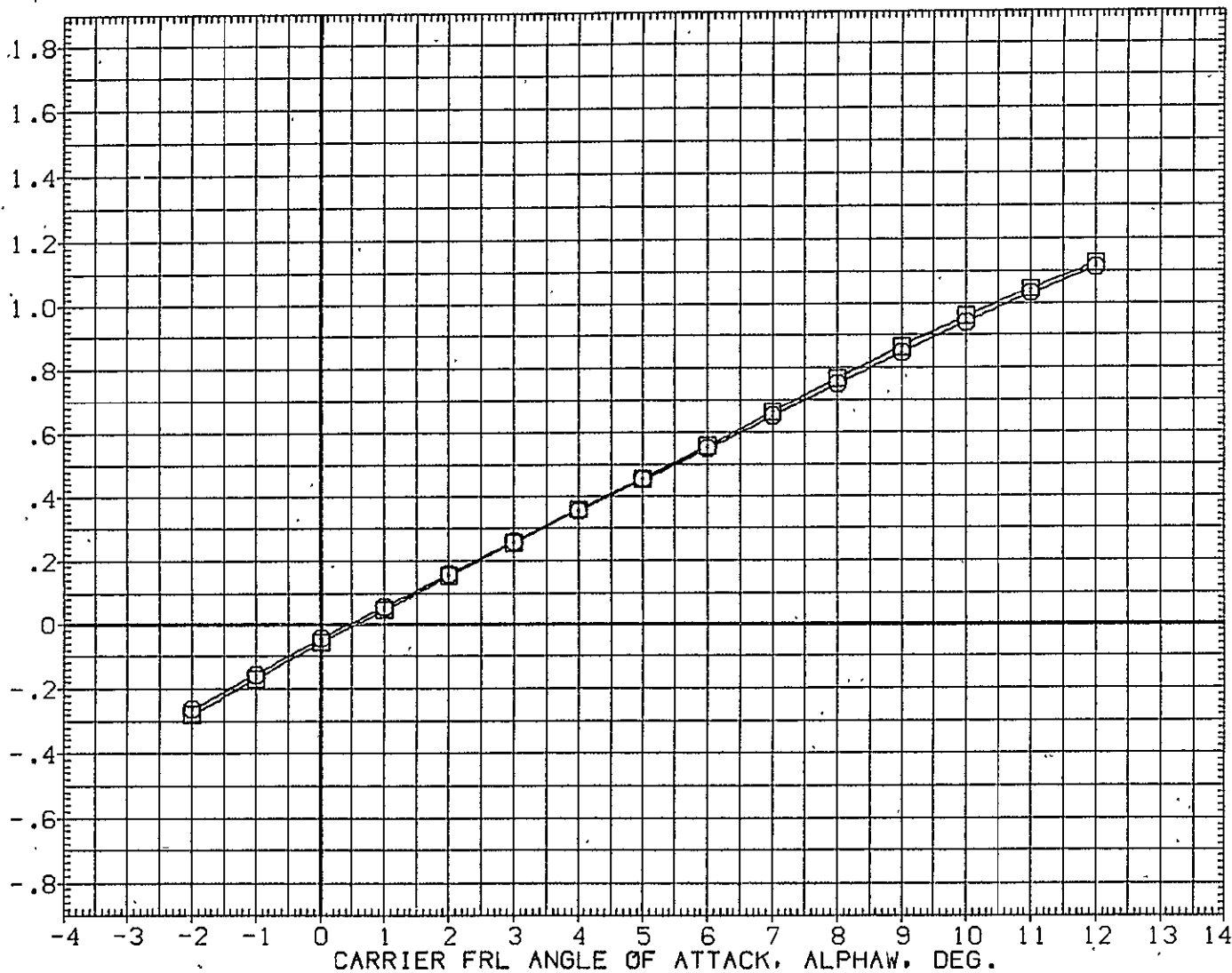


FIG. 47 747+ORB(8 DEG)+TIP FINS, FLAPS UP LAUNCH, ORB ELEVON=5 DEG

SYMBOL

○
□

MACH

.500
.600

PARAMETRIC VALUES

BETA	.000	STAB	1.000
RUD-U	.000	ELV-1B	.000
ELV-0B	3.000	S1-2	.000
S3-4	45.000	S5-6	20.000
IORB	7.850	ORBELV	5.000

REFERENCE INFORMATION

SREF	5500.0000	SQ.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

LIFT COEFFICIENT, CL

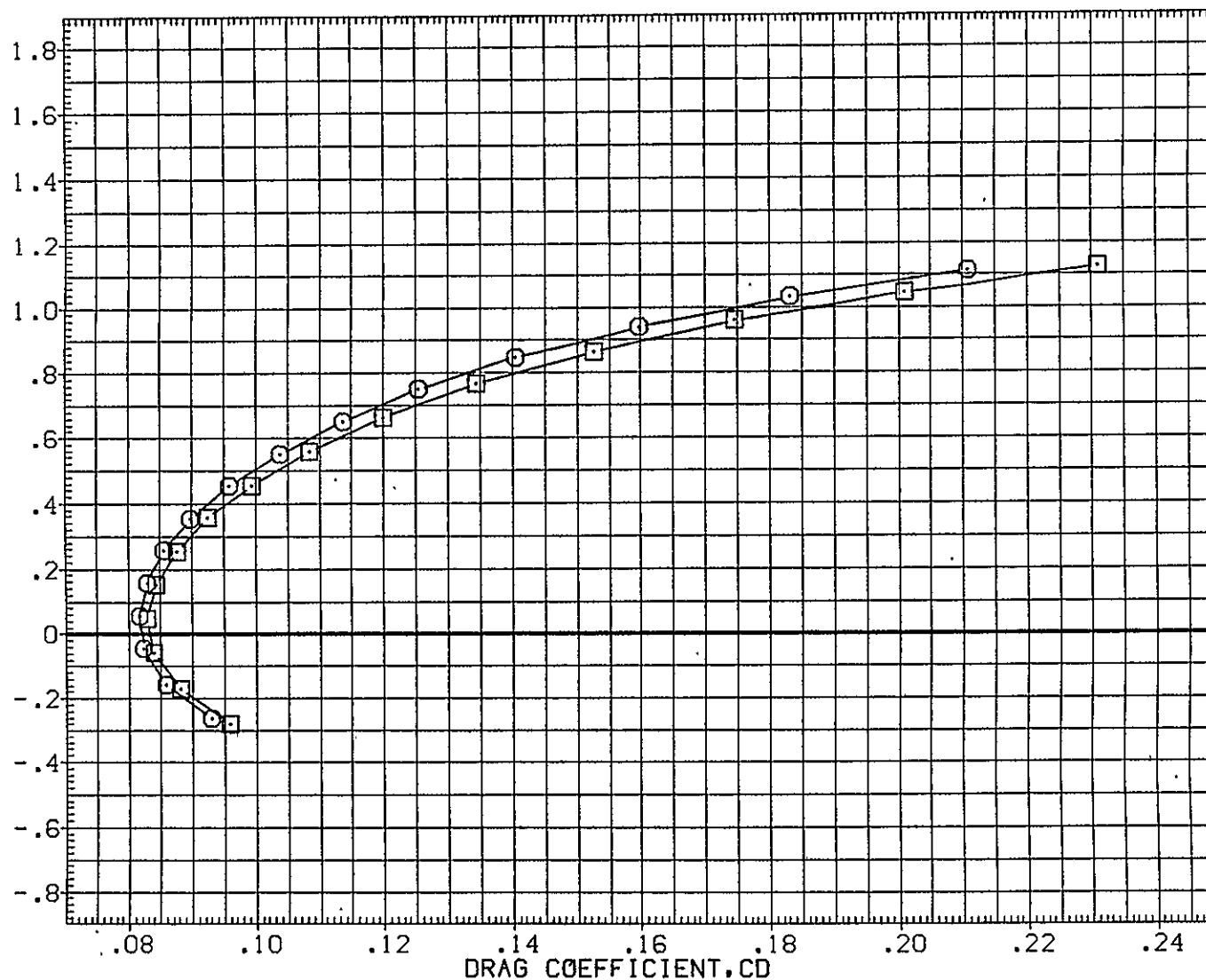


FIG. 47 747+ORB(8 DEG)+TIP FINS, FLAPS UP LAUNCH, ORB ELEVON=5 DEG

TOTAL

CA5 K1 FO H15.6 V9.1 (PLUS. ORB TC5 AT38.2)(RGM087)

SYMBOL	MACH	PARAMETRIC VALUES			
○	.500	BETA	.000	STAB	1.000
□	.600	RUD-U	.000	ELV-18	.000
		ELV-08	3.000	SI-2	.000
		S3-4	45.000	S5-6	20.000
		10RB	7.850	ORBELV	5.000

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1338.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	



FIG. 47 747+ORB(8 DEG)+TIP FINS, FLAPS UP LAUNCH, ORB ELEVON=5 DEG

TOTAL

SYMBOL

□ ○

MACH

BETA

PARAMETRIC VALUES

STAB

1.000

.500 RUD-U

.000 ELV-1B

.000

ELV-OB

3.000 SI-2

.000

S3-4

45.000 S5-6

20.000

IORB

7.850 ORBELV

5.000

REFERENCE INFORMATION

SREF	.5500.0000	SQ.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

CARRIER FRL ANGLE OF ATTACK, ALPHAW, DEG.

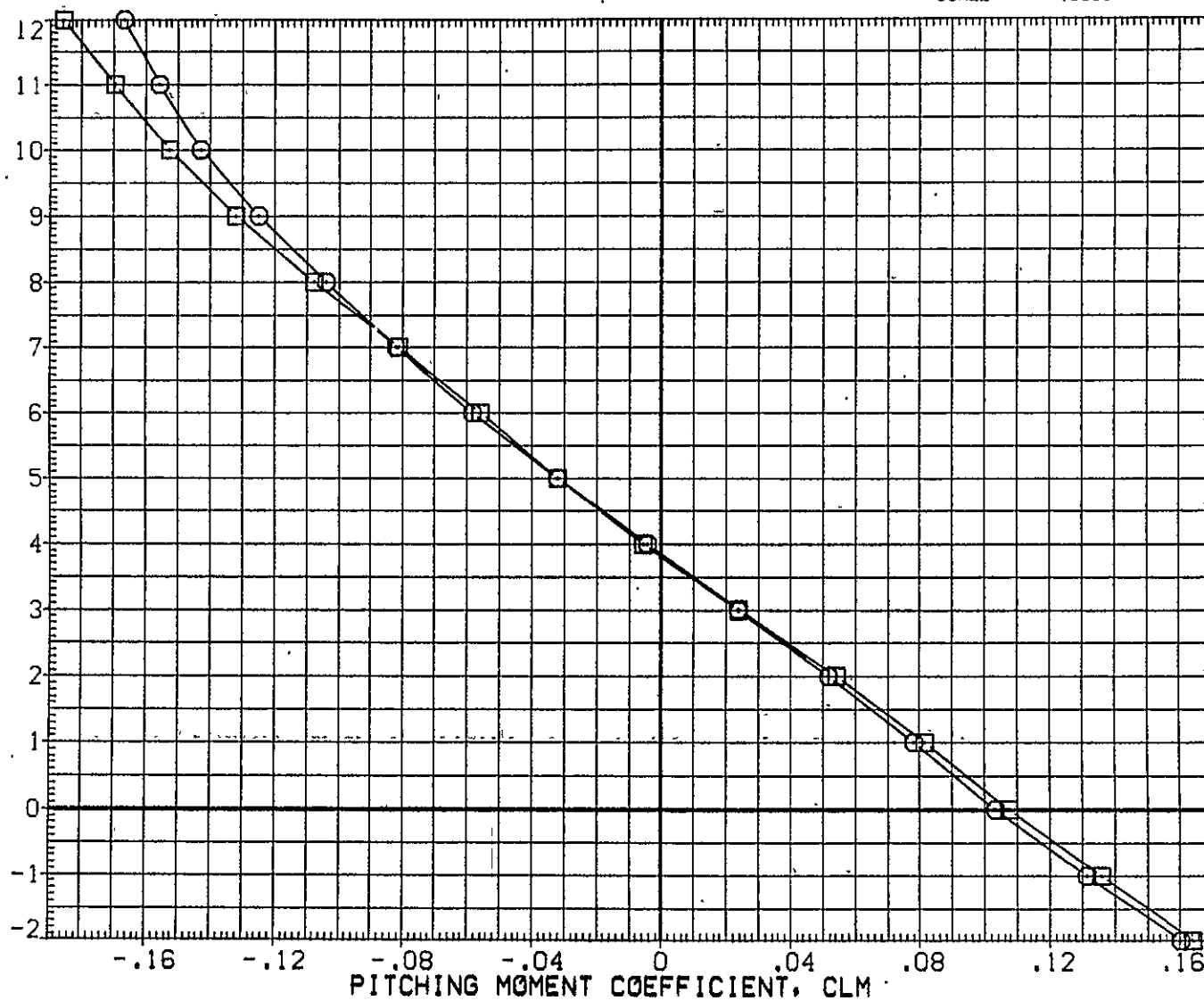


FIG. 47 747+ORB(8 DEG)+TIP FINS, FLAPS UP LAUNCH, ORB ELEVON=5 DEG

TOTAL

PAGE 188

CA5 K1.F0 H15.6 V9.1 MINUS ORB TC5 AT38.2 (BGM087)

SYMBOL	MACH	PARAMETRIC VALUES			
○	.500	BETA	.000	STAB	1.000
□	.600	RUD-U	.000	ELV-1B	.000
		ELV-OB	3.000	S1-2	.000
		S3-4	45.000	S5-6	20.000
		10RB	7.850	ORBELV	5.000

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

INCREMENTAL LIFT FORCE COEFFICIENT(STABILITY AXIS), DCL

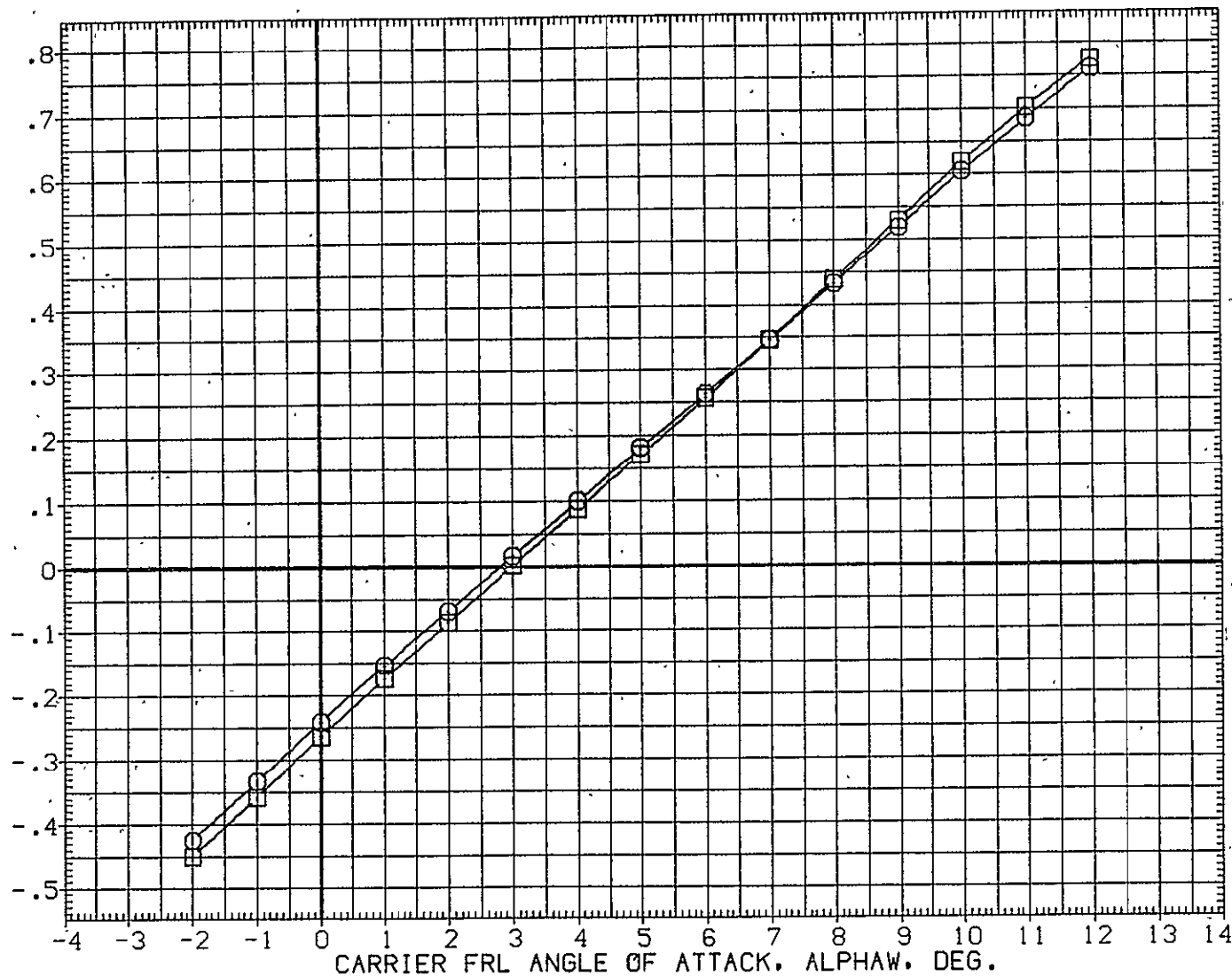


FIG. 48 747+ORB(8 DEG)+TIP FINS, FLAPS UP LAUNCH, ORB ELEVON=5 DEG

747

SYMBOL

○
□

MACH

.500
.600

PARAMETRIC VALUES

BETA	.000	STAB	1.000
RUD-U	.000	ELV-1B	.000
ELV-0B	3.000	S1-2	.000
S3-4	45.000	S5-6	20.000
ORB	7.850	ORBELV	5.000

REFERENCE INFORMATION

SREF	5500.0000	SQ.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	-190.7500	IN. ZC
SCALE	.0300	

INCREMENTAL LIFT FORCE COEFFICIENT(STABILITY AXIS), DCL

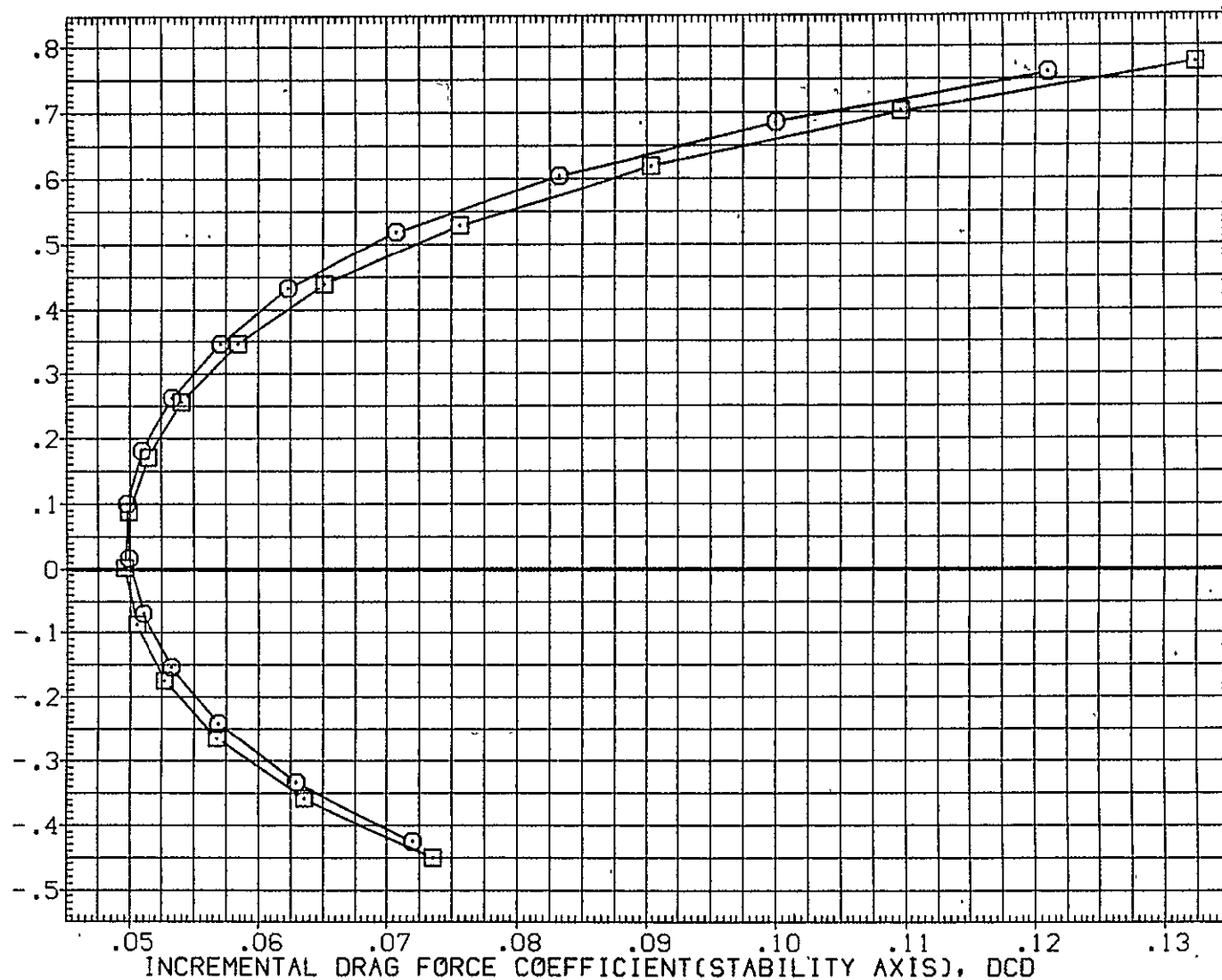


FIG. 48 747+ORB(8 DEG)+TIP FINS, FLAPS UP LAUNCH, ORB ELEVON=5 DEG

747

CA5 K1 FO H15.6 V9.1 MINUS ORB TC5 AT38.2 (BGM087)

SYMBOL	MACH	PARAMETRIC VALUES			
○	.500	BETA	.000	STAB	1.000
□	.600	RUD-U	.000	ELV-1B	.000
		ELV-0B	3.000	S1-2	.000
		S3-4	45.000	S5-6	20.000
		10RB	7.850	0RBELV	5.000

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

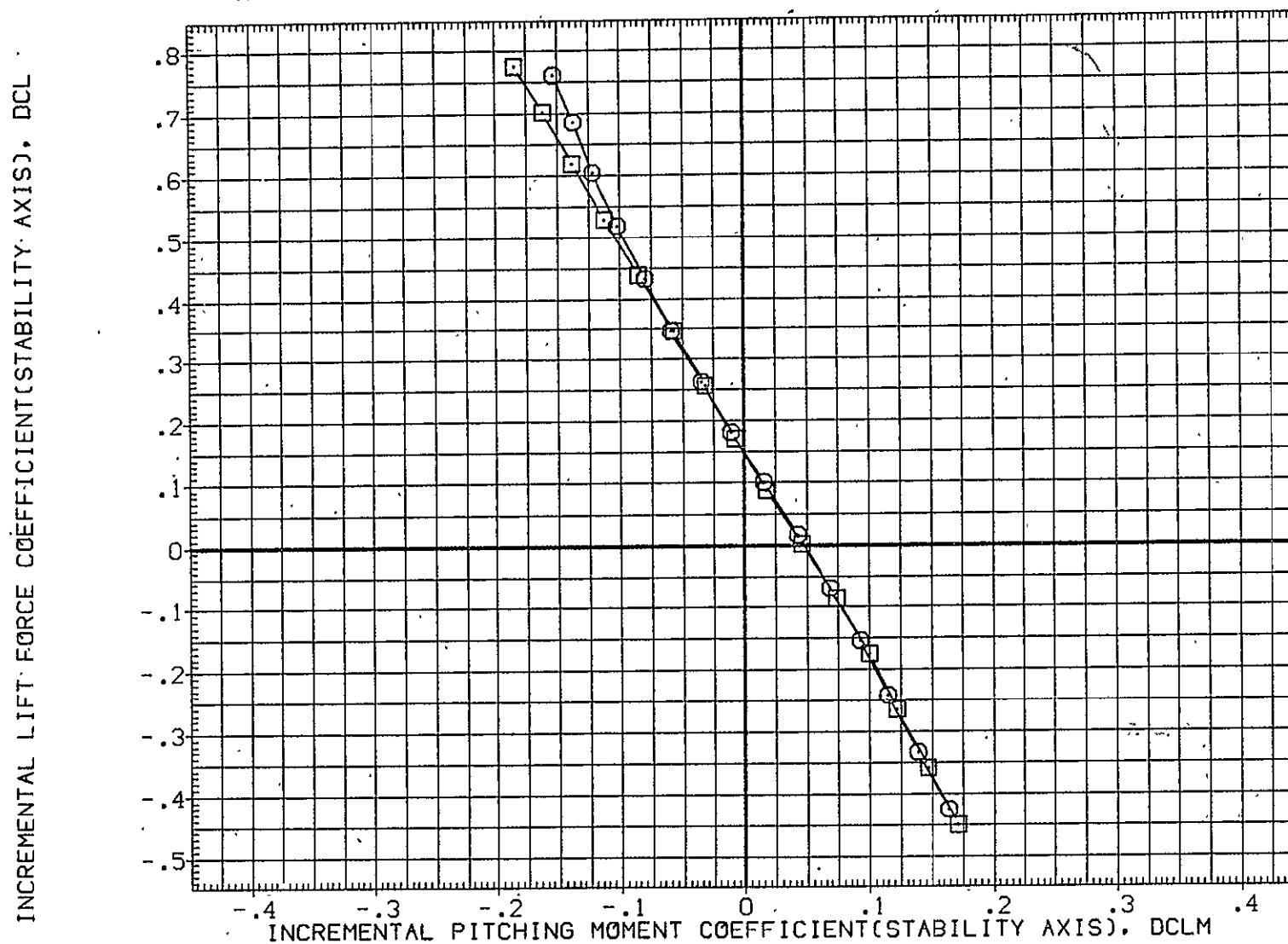


FIG. 48 747+ORB(8 DEG)+TIP FINS, FLAPS UP LAUNCH, ORB ELEVON=5 DEG

747

SYMBOL	MACH	PARAMETRIC VALUES				REFERENCE INFORMATION		
○	.500	BETA	.000	STAB	1.000	SREF	5500.0000	SQ.FT.
□	.600	RUD-U	.000	ELV-IB	.000	LREF	327.8000	IN.
		ELV-OB	3.000	SI-2	.000	BREF	2348.0000	IN.
		S3-4	45.000	S5-6	20.000	XMRP	1339.9100	IN. XC
		IDRB	7.850	ORBELV	5.000	YMRP	.0000	IN. YC
						ZMRP	190.7500	IN. ZC
						SCALE	.0300	

CARRIER FRL ANGLE OF ATTACK, ALPHA, DEG.

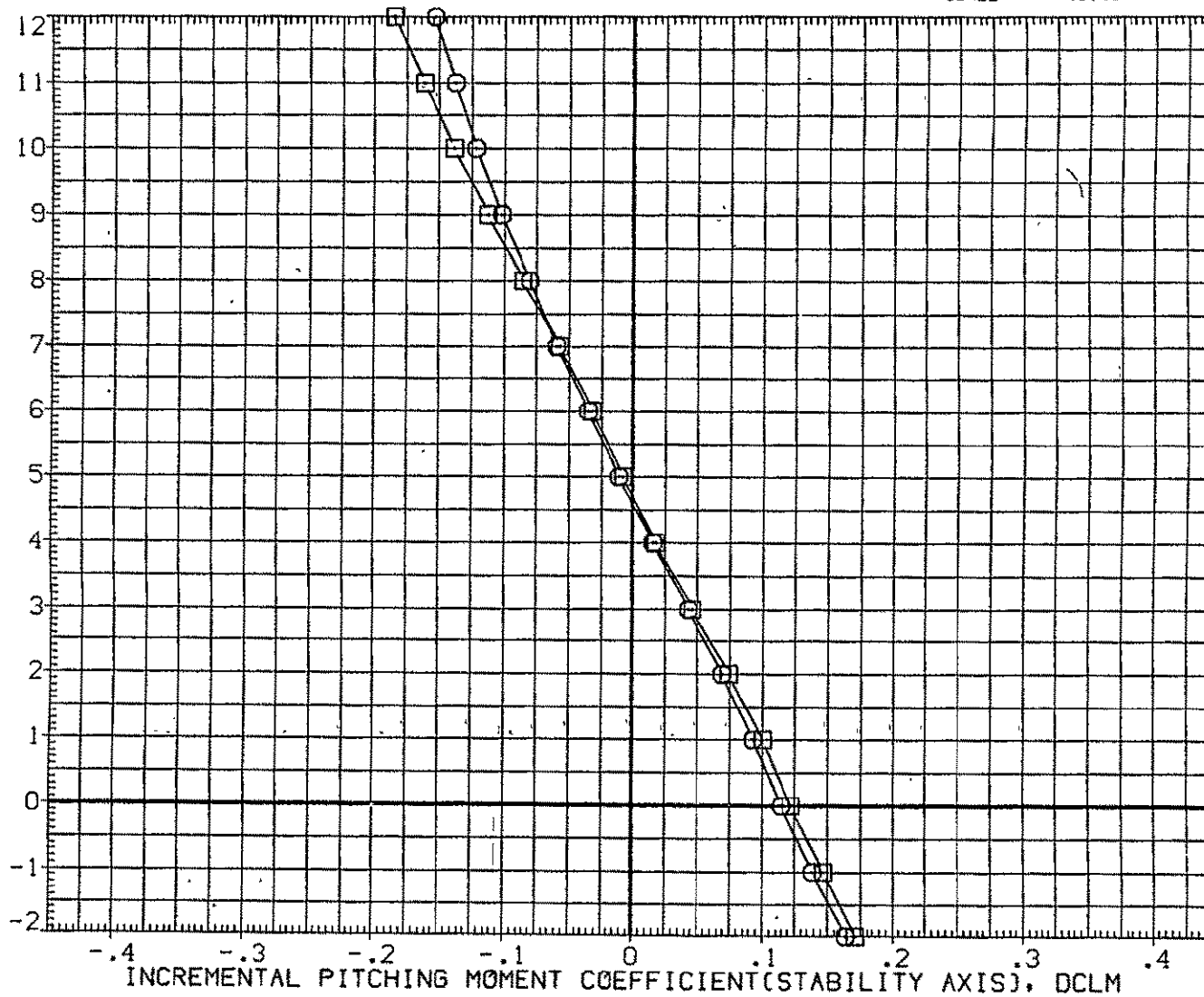


FIG. 48 747+ORB(8 DEG)+TIP FINS, FLAPS UP LAUNCH, ORB ELEVON=5 DEG

747

CA5 ORB TC5 AT38.2 (PRES. K1 FO H15.6 V9.1)(YGM087)

SYMBOL	MACH	PARAMETRIC VALUES			
○	.499	BETA	.000	STAB	1.000
□	.600	RUD-U	.000	ELV-IB	.000
		ELV-OB	3.000	SI-2	.000
		S3-4	45.000	S5-6	20.000
		IORB	7.850	ORBELV	5.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN. X0
YMRP	.0000	IN. Y0
ZMRP	375.0000	IN. Z0
SCALE	.0300	

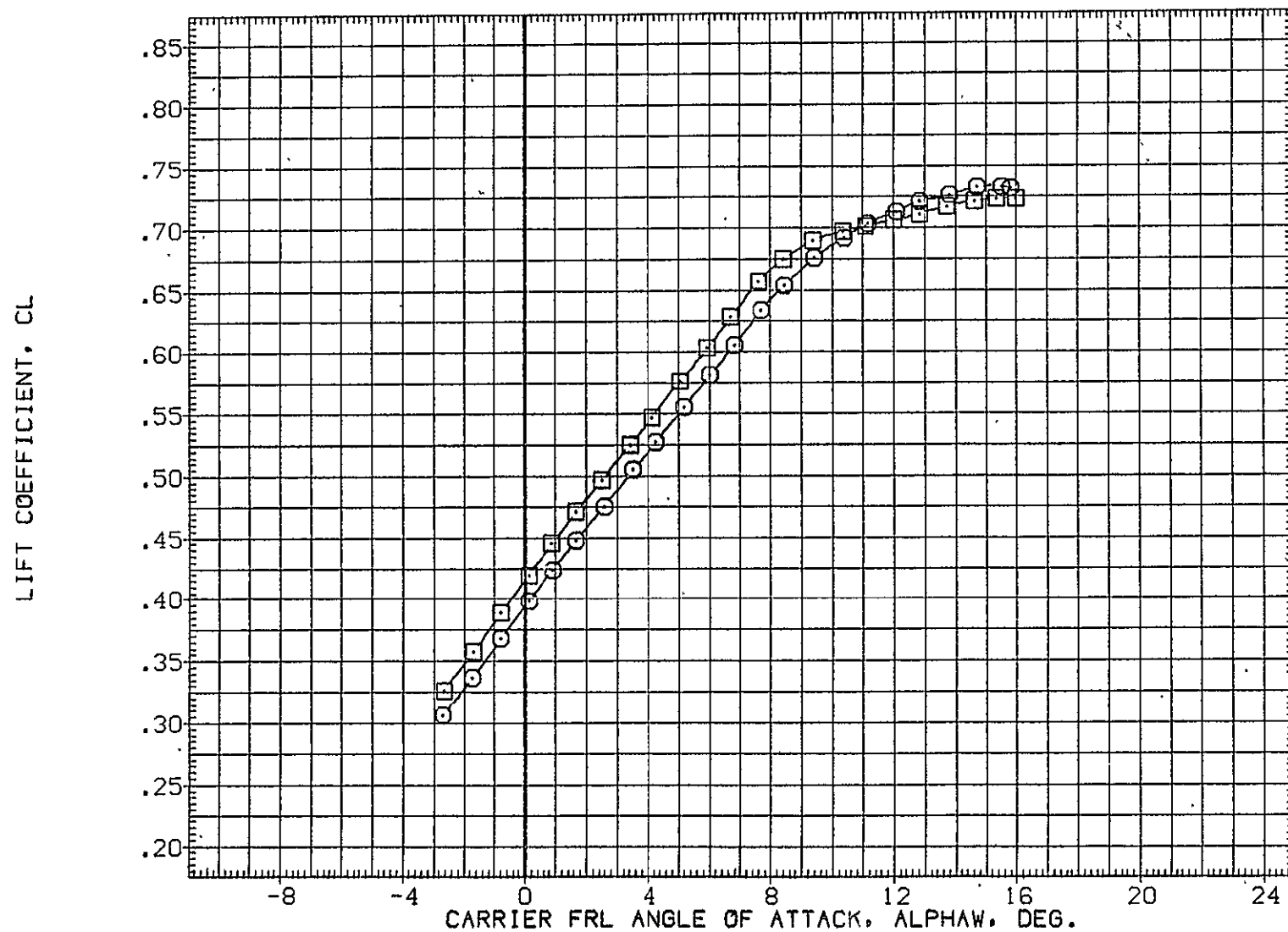


FIG. 49 747+ORB(8 DEG)+TIP FINS, FLAPS UP LAUNCH, ORB ELEVON=5 DEG

ORB

SYMBOL

MACH

PARAMETRIC VALUES

REFERENCE INFORMATION

○
□

.499

BETA

.000

STAB

1.000

SREF

2690.0000

SQ.FT.

LREF

474.8100

IN.

BREF

936.6800

IN.

XMRP

1109.0000

IN. X0

YMRP

.0000

IN. Y0

ZMRP

375.0000

IN. Z0

SCALE

.0300

RUD-U

.000

ELV-18

.000

ELV-08

3.000

S1-2

.000

S3-4

45.000

S5-6

20.000

10RB

7.850

ORBELV

5.000

LIFT COEFFICIENT, CL

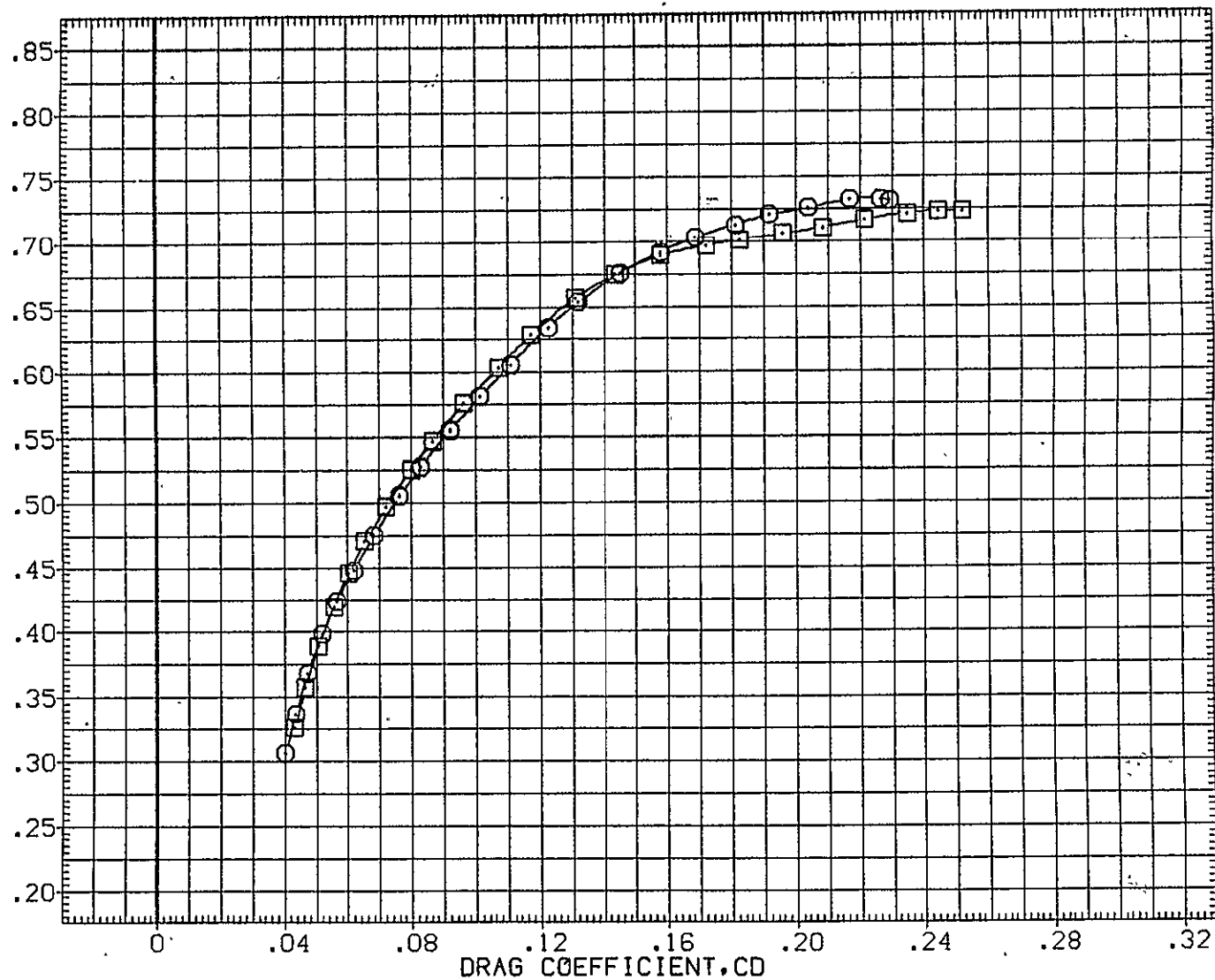


FIG. 49 747+ORB(8 DEG)+TIP FINS, FLAPS UP LAUNCH, ORB ELEVON=5 DEG

ORB

CA5 ORB TC5 AT38.2 (PRES. K1 F0 H15.6 V9.1)(YGM087)

SYMBOL

○

□

MACH

.499

.600

PARAMETRIC VALUES

BETA	.000	STAB	1.000
RUD-U	.000	ELV-1B	.000
ELV-0B	3.000	S1-2	.000
S3-4	45.000	S5-6	20.000
10RB	7.850	ORBELV	5.000

REFERENCE INFORMATION

SREF	2690.0000	50.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN. X0
YMRP	.0000	IN. Y0
ZMRP	375.0000	IN. Z0
SCALE	.0300	

LIFT COEFFICIENT, CL

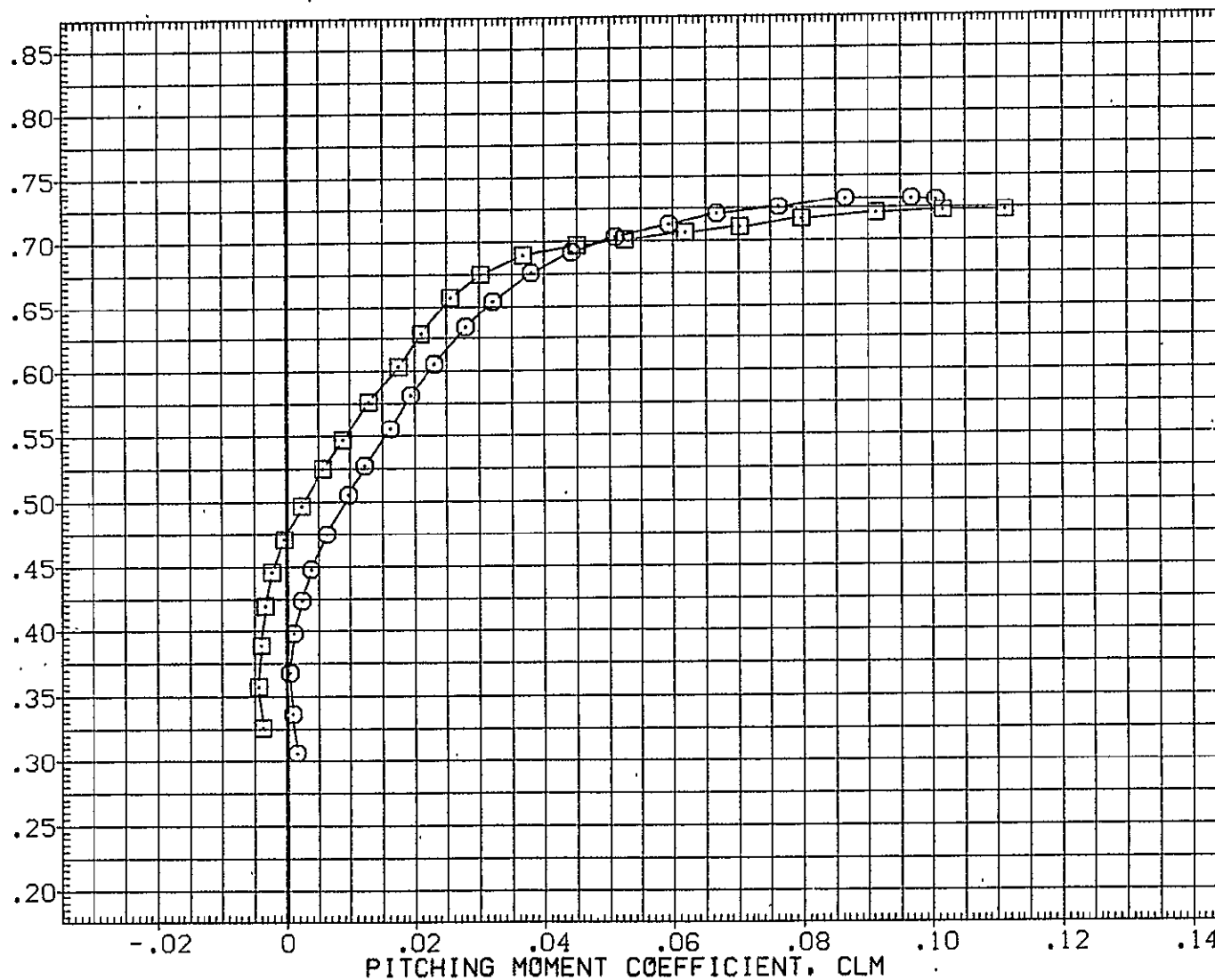


FIG. 49 747+ORB(8 DEG)+TIP FINS, FLAPS UP LAUNCH, ORB ELEVON=5 DEG

ORB

SYMBOL

○
□

MACH

.499
.600BETA
RUD-U
ELV-OB
S3-4
IORB

PARAMETRIC VALUES

.000	STAB	1.000
.000	ELV-1B	.000
3.000	S1-2	.000
45.000	S5-6	20.000
7.850	ORBELV	5.000

REFERENCE INFORMATION

SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN. X0
YMRP	.0000	IN. Y0
ZMRP	375.0000	IN. Z0
SCALE	.0300	

CARRIER FRL ANGLE OF ATTACK, ALPHA, DEG.

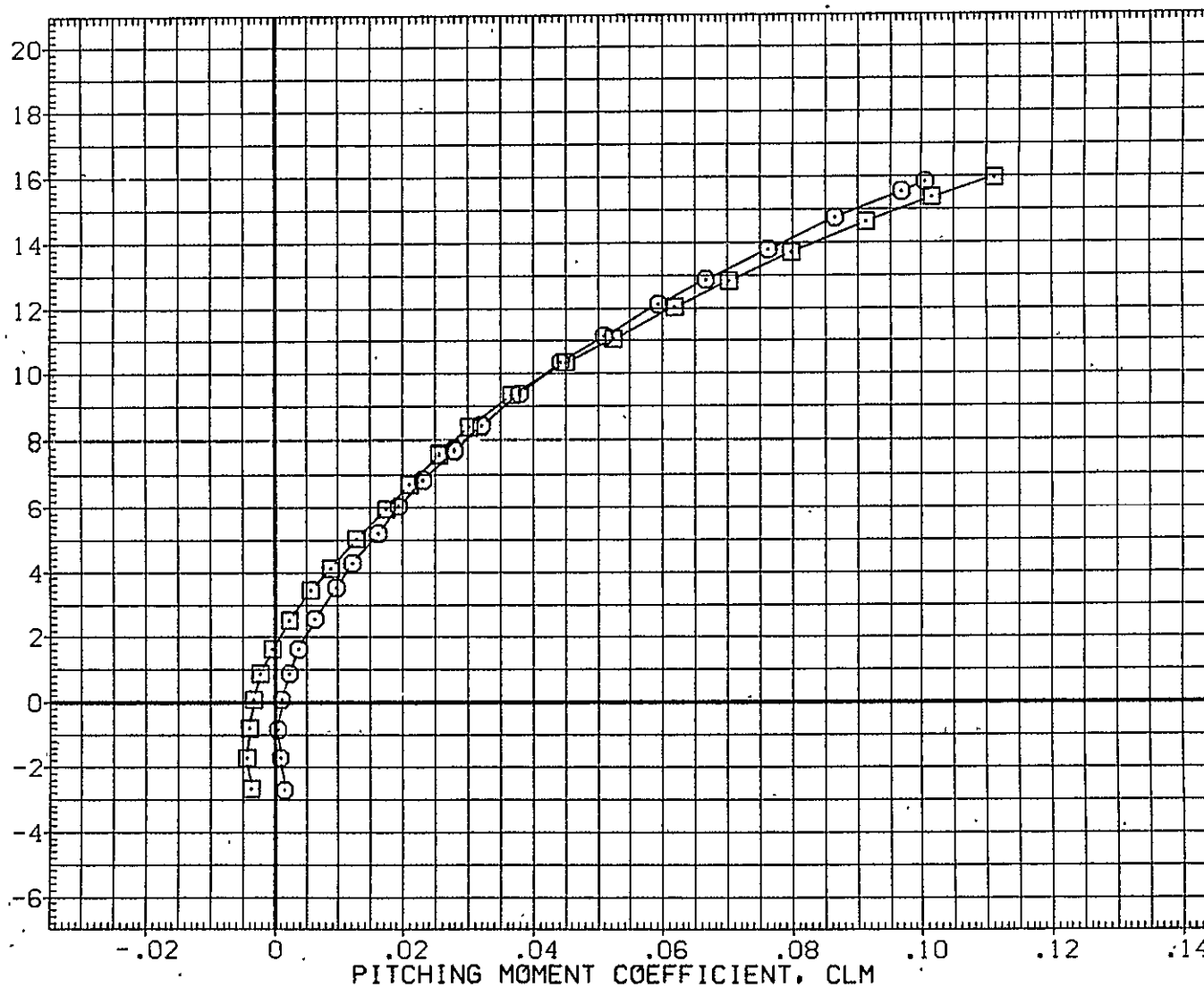


FIG. 49 747+ORB(8 DEG)+TIP FINS, FLAPS UP LAUNCH, ORB ELEVON=5 DEG

ORB

CA5 K1 FO H15.6 V9.1 (PLUS. ORB TC5 AT38.2)(RGM090)

SYMBOL	MACH	PARAMETRIC VALUES			
○	.300	BETA	.000	STAB	1.000
□	.500	RUD-U	.000	ELV-1B	.000
◇	.600	ELV-OB	3.000	S1-2	.000
△	.700	S3-4	.000	S5-6	.000
		IORB	7.850	ORBELV	.000

REFERENCE INFORMATION		
SREF	5500.0000	50.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

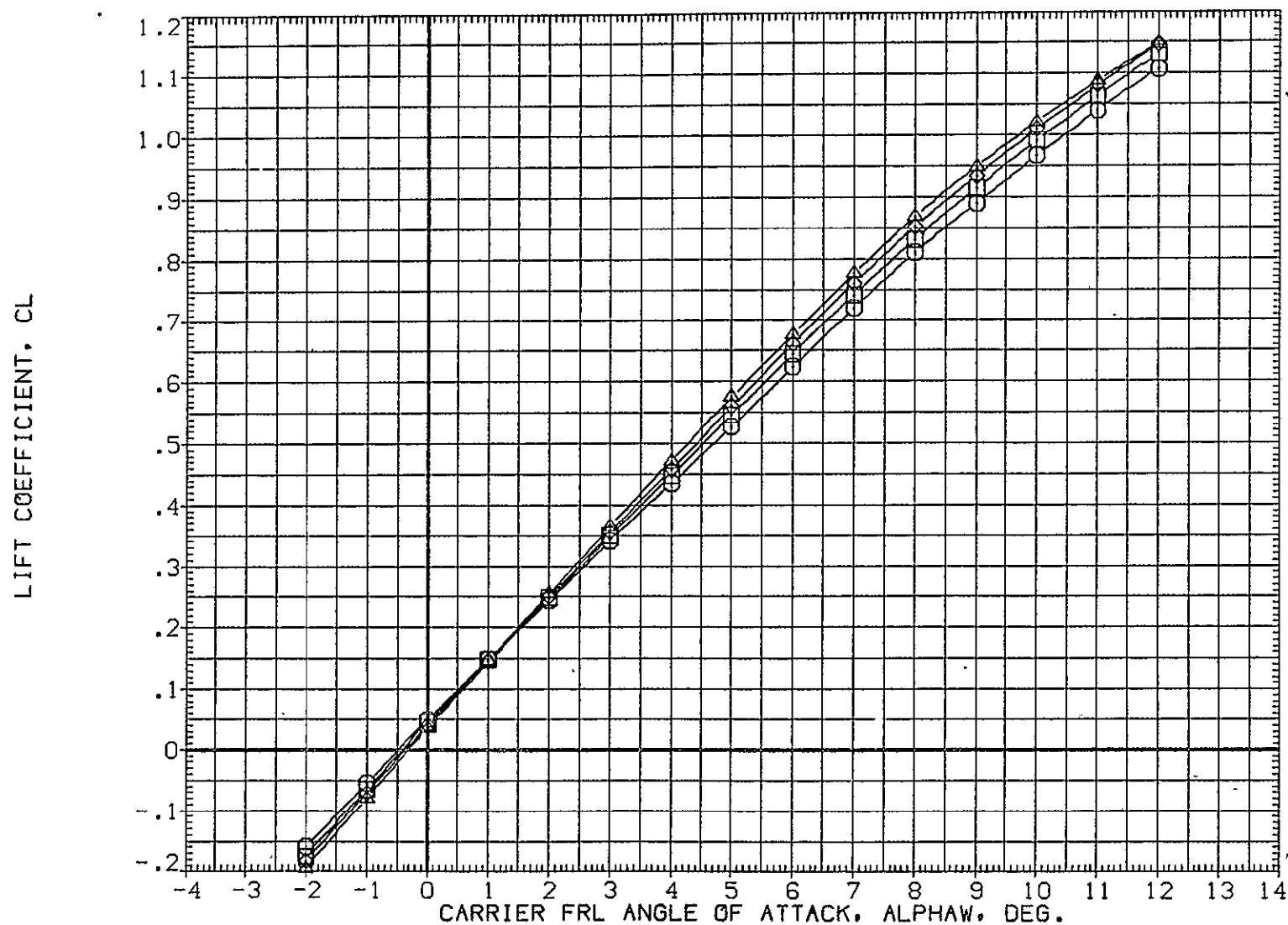


FIG. 50 747+ORB(8 DEG)+TIP FINS, FLAPS UP LAUNCH, NO SPEED BRAKES

TOTAL

SYMBOL	MACH	PARAMETRIC VALUES			
○	.300	BETA	.000	STAB	1.000
□	.500	RUD-U	.000	ELV-1B	.000
◇	.600	ELV-OB	3.000	S1-2	.000
△	.700	S3-4	.000	S5-6	.000
		IORB	7.850	ORBELV	.000

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

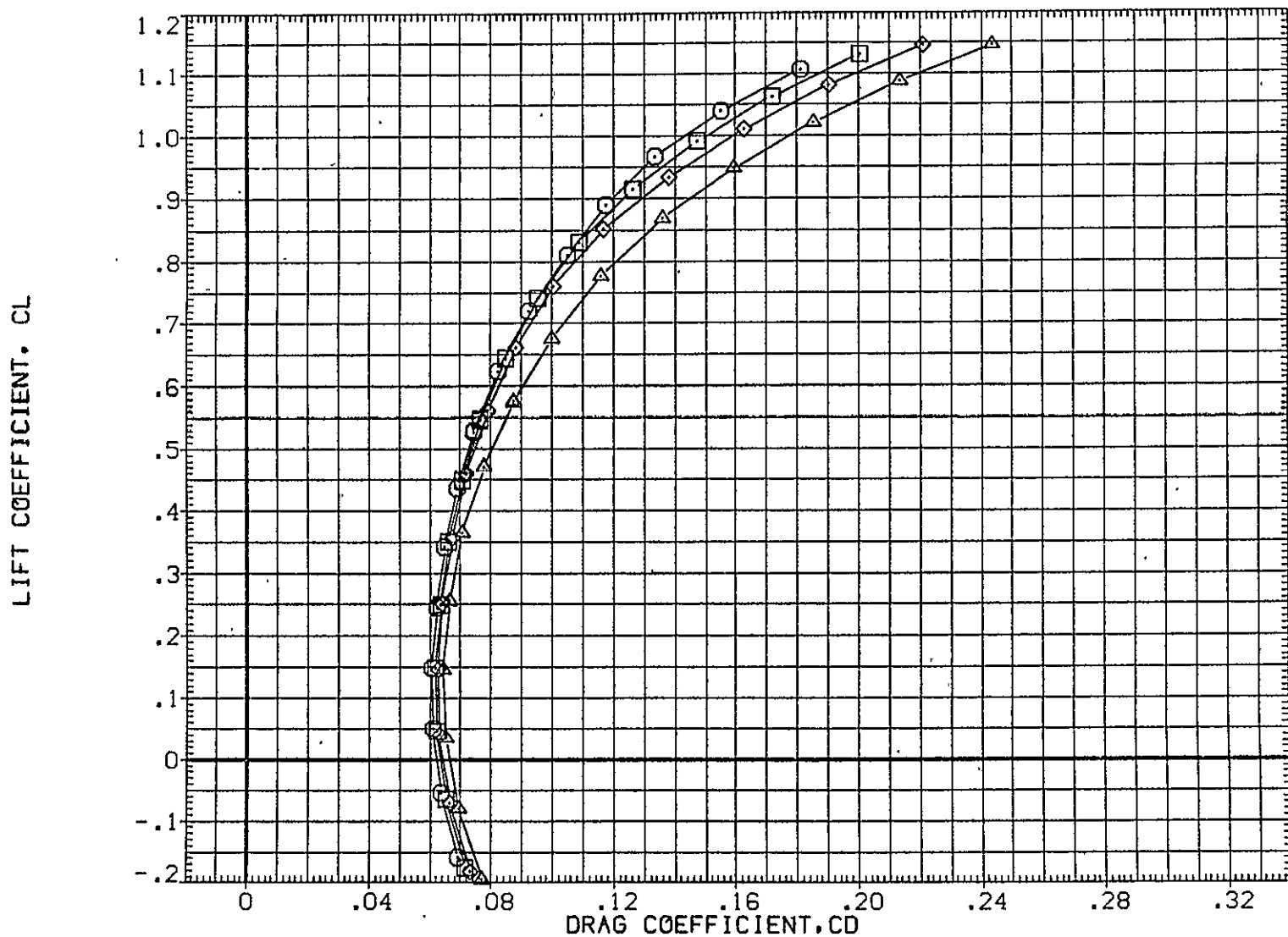


FIG. 50 747+ORB(8 DEG)+TIP FINS, FLAPS UP LAUNCH, NO SPEED BRAKES

TOTAL

CA5 K1 FO H15.6 V9.1 (PLUS. ORB TC5 AT38.2)(RGM090)									
SYMBOL	MACH	PARAMETRIC VALUES				REFERENCE INFORMATION			
○	.300	BETA	.000	STAB	1.000	SREF	5500.0000	SQ.FT.	
□	.500	RUD-U	.000	ELV-IB	.000	LREF	327.8000	IN.	
◇	.600	ELV-OB	3.000	S1-2	.000	BREF	2348.0000	IN.	
△	.700	S3-4	.000	S5-6	.000	XMRP	1339.9100	IN. XC	
		IORB	7.850	ORBELV	.000	YMRP	.0000	IN. YC	
						ZMRP	190.7500	IN. ZC	
						SCALE	.0300		

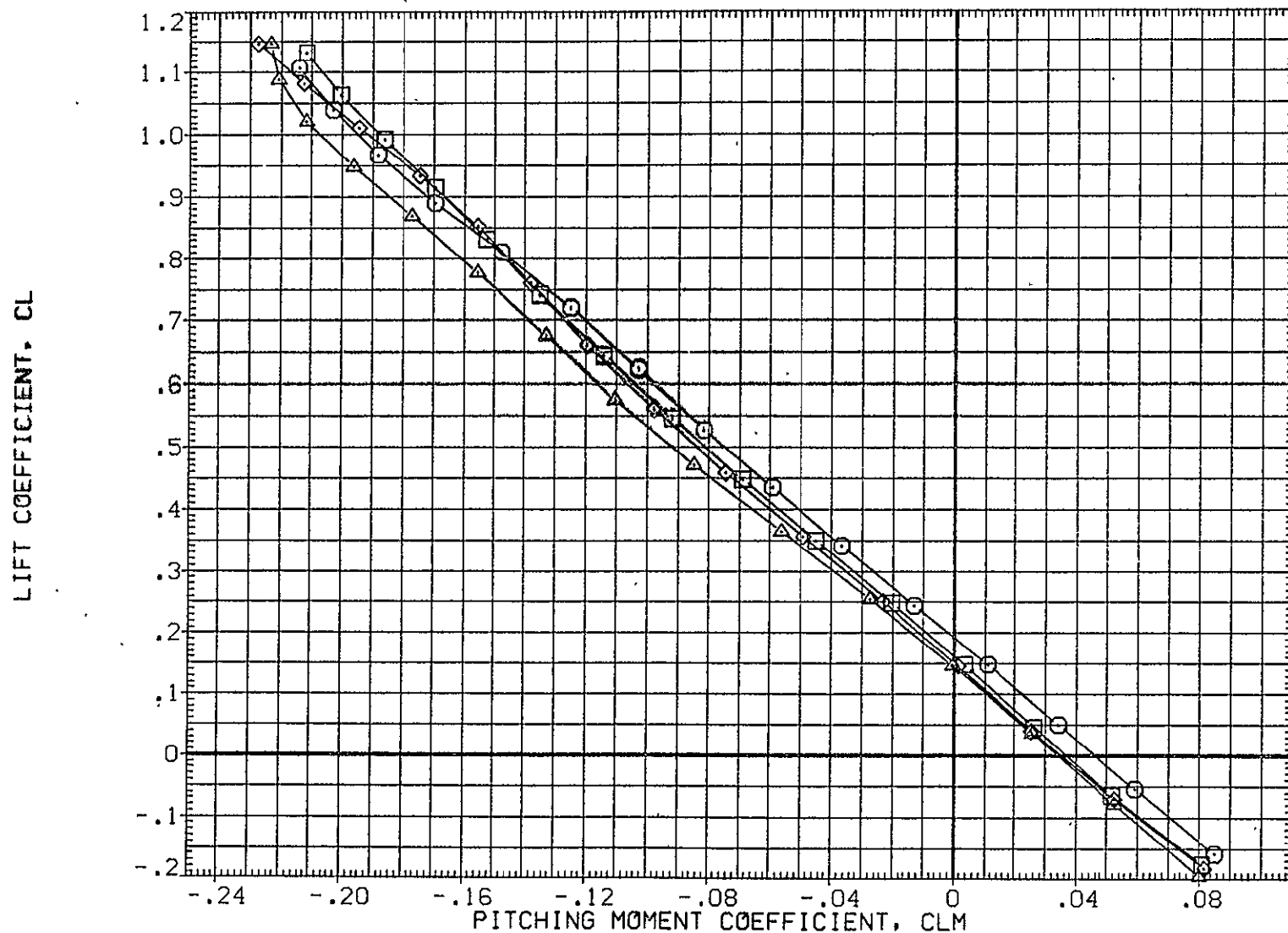


FIG. 50 747+ORB(8 DEG)+TIP FINS, FLAPS UP LAUNCH, NO SPEED BRAKES

SYMBOL
○
□
◇
△

MACH	BETA	PARAMETRIC VALUES	STAB	1.000
.300				
.500	RUD-U	.000	ELV-1B	.000
.600	ELV-OB	3.000	SI-2	.000
.700	S3-4	.000	S5-6	.000
	IORB	7.850	ORBELV	.000

REFERENCE INFORMATION		
SREF	5500.0000	50.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

CARRIER FRL ANGLE OF ATTACK, ALPHA, DEG.

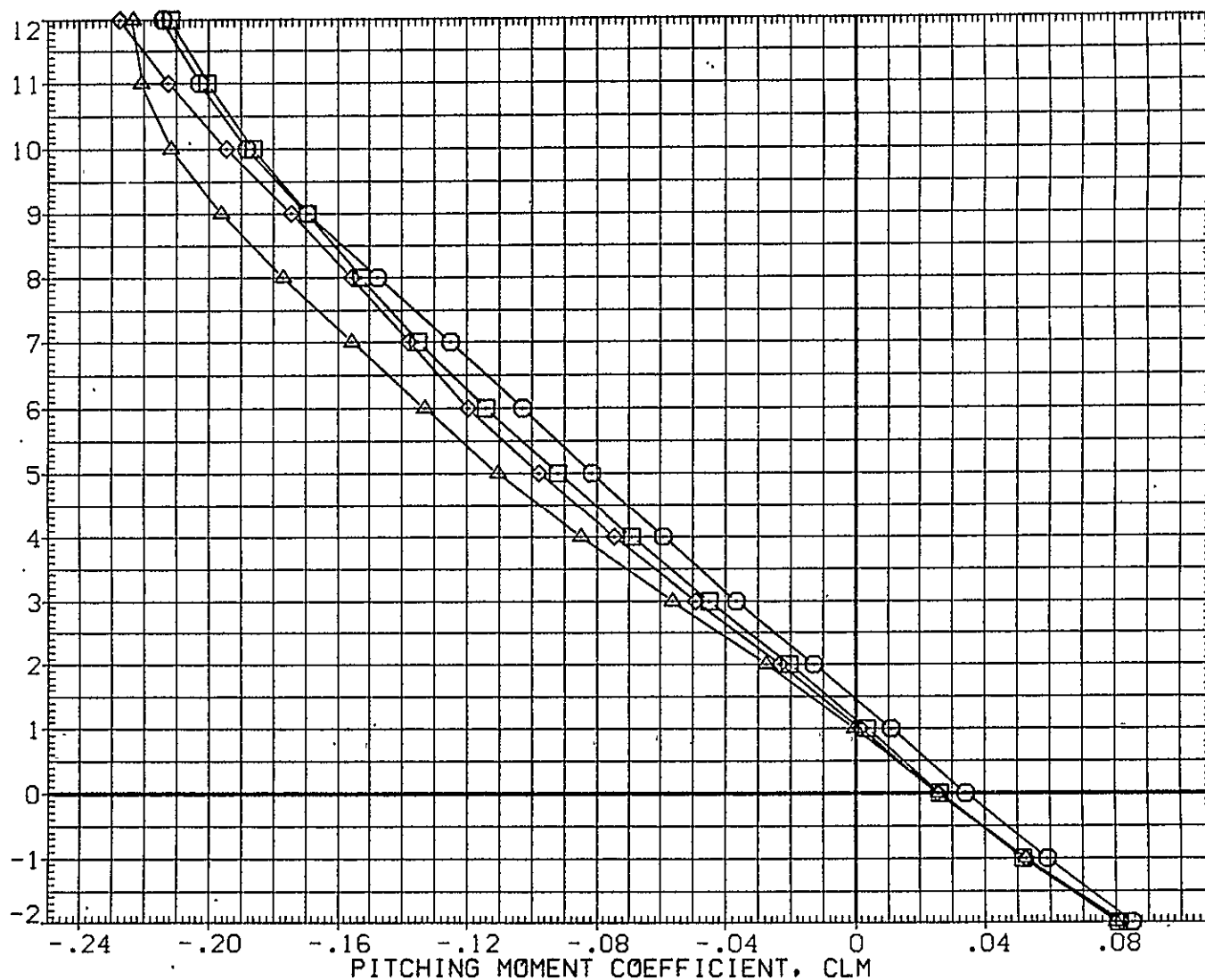


FIG. 50 747+ORB(8 DEG)+TIP FINS, FLAPS UP LAUNCH, NO SPEED BRAKES

TOTAL

PAGE

200

CA5 K1 F0 H15.6 V9.1 MINUS ORB TC5 AT38.2 (BGM090)

SYMBOL	MACH	PARAMETRIC VALUES			
○	.300	BETA	.000	STAB	1.000
□	.500	RUD-U	.000	ELV-1B	.000
◇	.600	ELV-0B	3.000	S1-2	.000
△	.700	S3-4	.000	S5-6	.000
		10RB	7.850	ORBELV	.000

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

INCREMENTAL LIFT FORCE COEFFICIENT(STABILITY AXIS), DCL

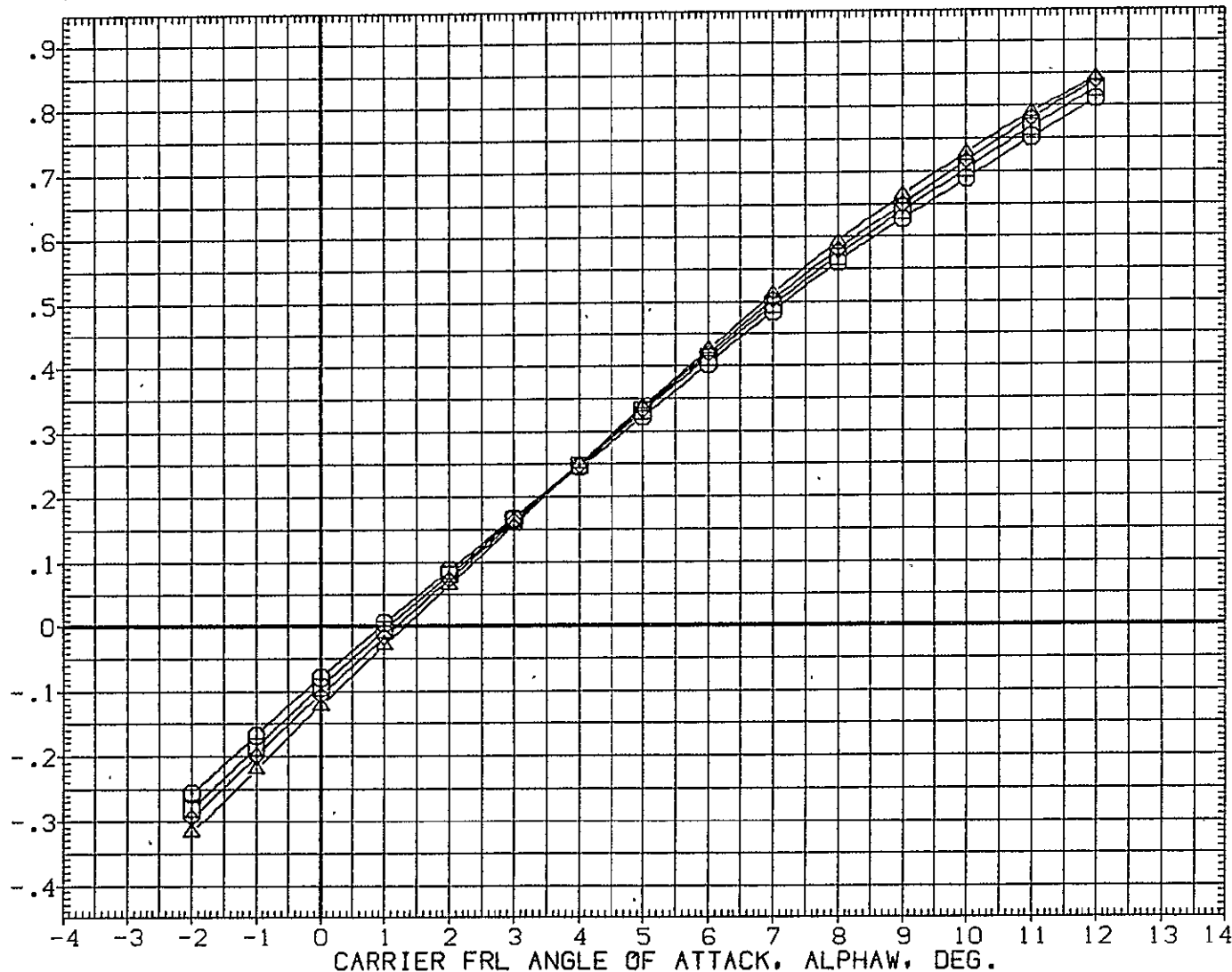


FIG. 51 747+ORB(8 DEG)+TIP FINS, FLAPS UP LAUNCH, NO SPEED BRAKES

747

CA5 K1 F0 H15.6 V9.1 MINUS ORB TC5 AT38.2 (BGM090)

SYMBOL	MACH	PARAMETRIC VALUES				REFERENCE INFORMATION		
○	.300	BETA	.000	STAB	1.000	SREF	5500.0000	SQ.FT.
□	.500	RUD-U	.000	ELV-18	.000	LREF	327.8000	IN.
◇	.600	ELV-08	.3.000	S1-2	.000	BREF	2348.0000	IN.
△	.700	S3-4	.000	S5-6	.000	XMRP	1339.9100	IN. XC
		10RB	7.850	ORBELV	.000	YMRP	.0000	IN. YC
						ZMRP	180.7500	IN. ZC
						SCALE	.0300	

INCREMENTAL LIFT FORCE COEFFICIENT(STABILITY AXIS), DCL

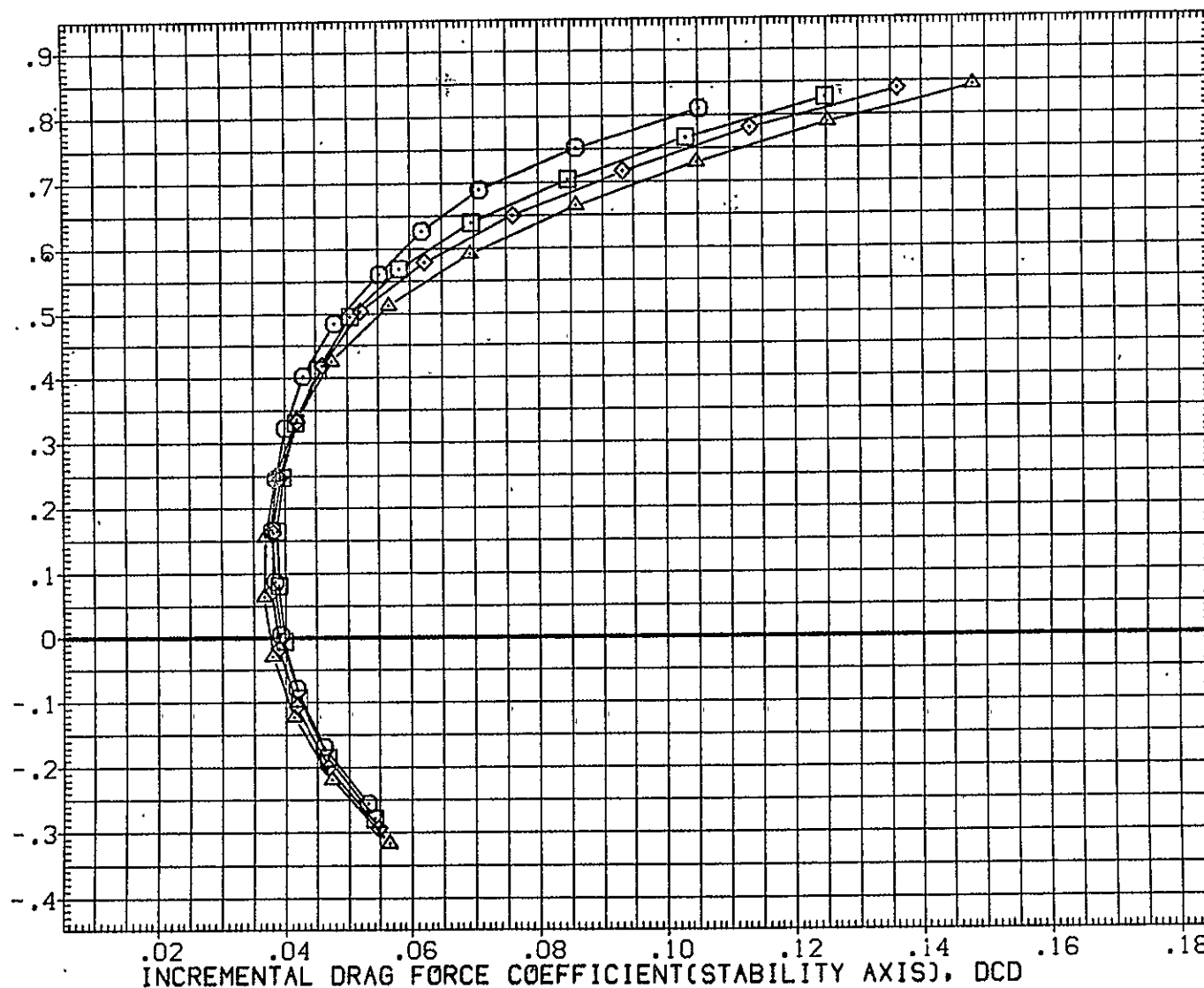


FIG. 51 747+ORB(8 DEG)+TIP FINS, FLAPS UP LAUNCH, NO SPEED BRAKES

747

CA5 K1 F0 H15.6 V9.1 MINUS ORB TC5 AT38.2 (BGM090)

SYMBOL
○
□
◇
△

MACH

.300
.500
.600
.700

BETA
RUD-U
ELV-08
S3-4
IORB

PARAMETRIC VALUES

.000 STAB
.000 ELV-1B
3.000 S1-2
.000 S5-6
7.850 ORBELV

1.000
.000
.000
.000
.000

REFERENCE INFORMATION

SREF 5500.0000 SQ.FT.
LREF 327.8000 IN.
BREF 2348.0000 IN.
XMRP 1339.9100 IN. XC
YMRP .0000 IN. YC
ZMRP 190.7500 IN. ZC
SCALE .0300

INCREMENTAL LIFT FORCE COEFFICIENT(STABILITY AXIS), DCL

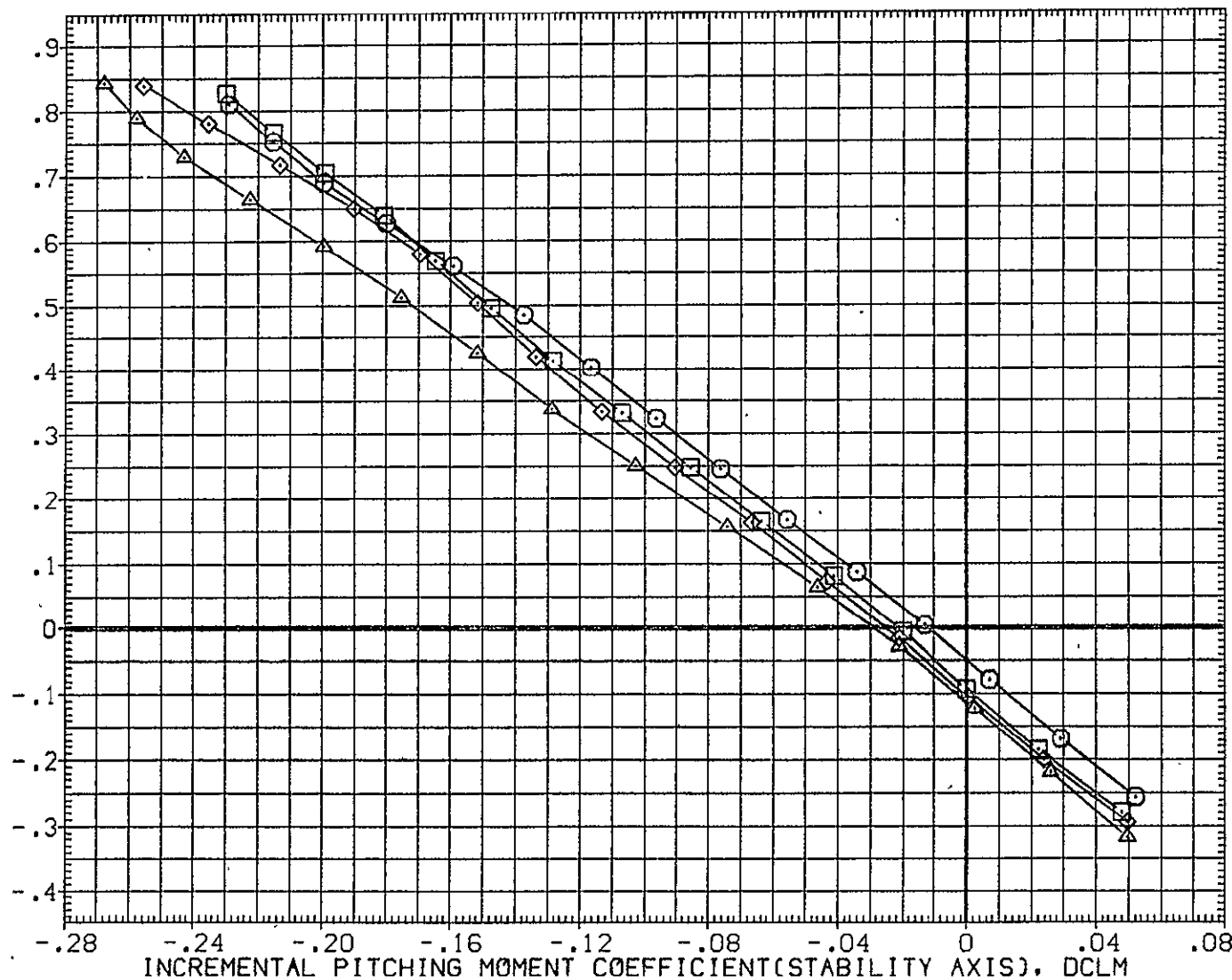


FIG. 51 747+ORB(8 DEG)+TIP FINS, FLAPS UP LAUNCH, NO SPEED BRAKES

747

SYMBOL
 \square
 \diamond
 \triangle

MACH

PARAMETRIC VALUES

.300	BETA	.000	STAB	1.000
.500	RUD-U	.000	ELV-1B	.000
.600	ELV-OB	3.000	S1-2	.000
.700	S3-4	.000	S5-6	.000
	IORB	7.850	ORBELV	.000

REFERENCE INFORMATION

SREF	5500.0000	50.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

CARRIER FRL ANGLE OF ATTACK, ALPHAW, DEG.

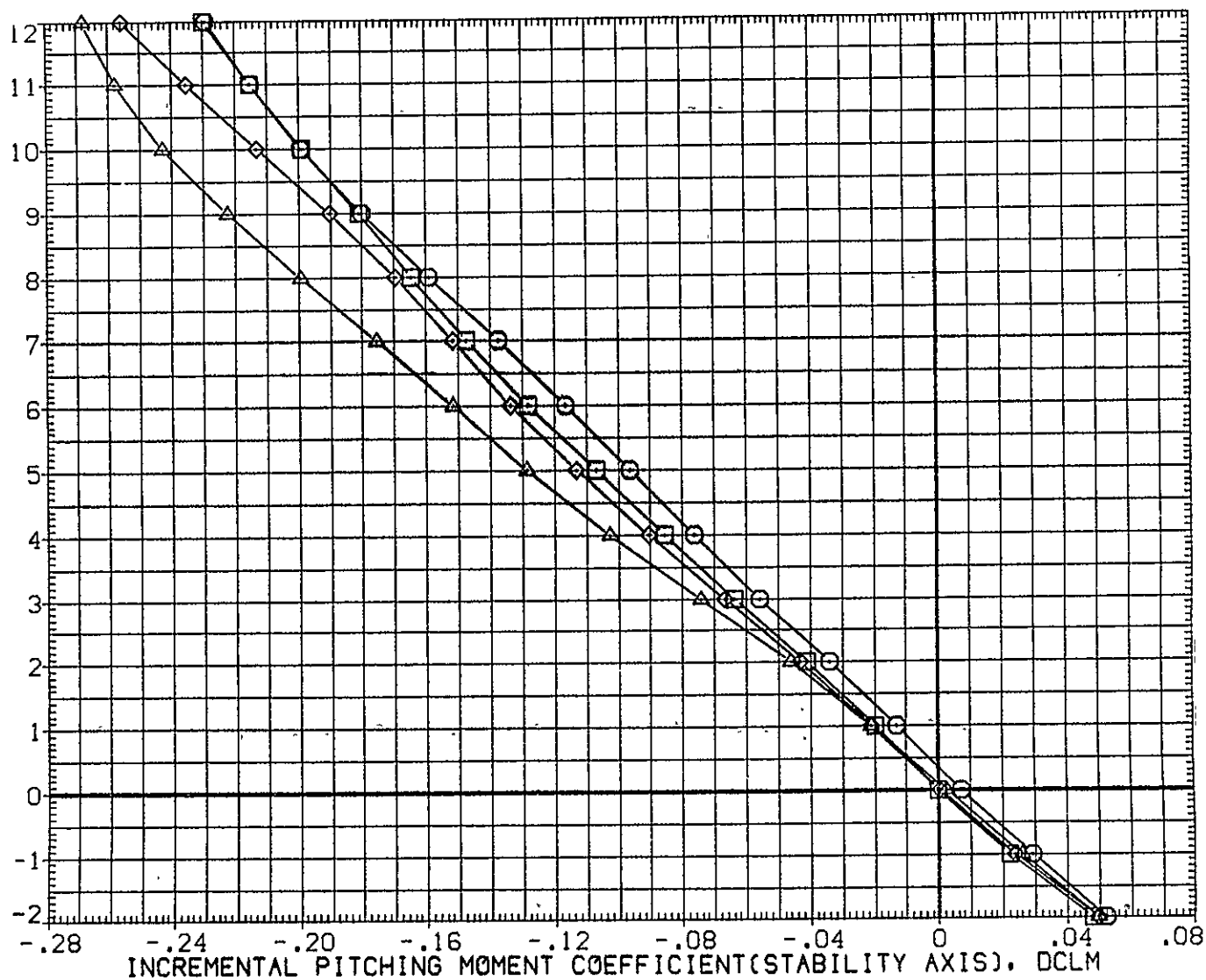


FIG. 51 747+ORB(8 DEG)+TIP FINS; FLAPS UP LAUNCH, NO SPEED BRAKES

747

CA5 0RB TC5 AT38.2 (PRES. K1 FO H15.6 V9.1)(YGM090)

SYMBOL	MACH	PARAMETRIC VALUES			
○	.301	BETA	.000	STAB	1.000
□	.501	RUD-U	.000	ELV-1B	.000
◇	.600	ELV-0B	3.000	S1-2	.000
△	.700	S3-4	.000	S5-6	.000
		10RB	7.850	ORBELV	.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN. X0
YMRP	.0000	IN. Y0
ZMRP	375.0000	IN. Z0
SCALE	.0300	

LIFT COEFFICIENT, CL

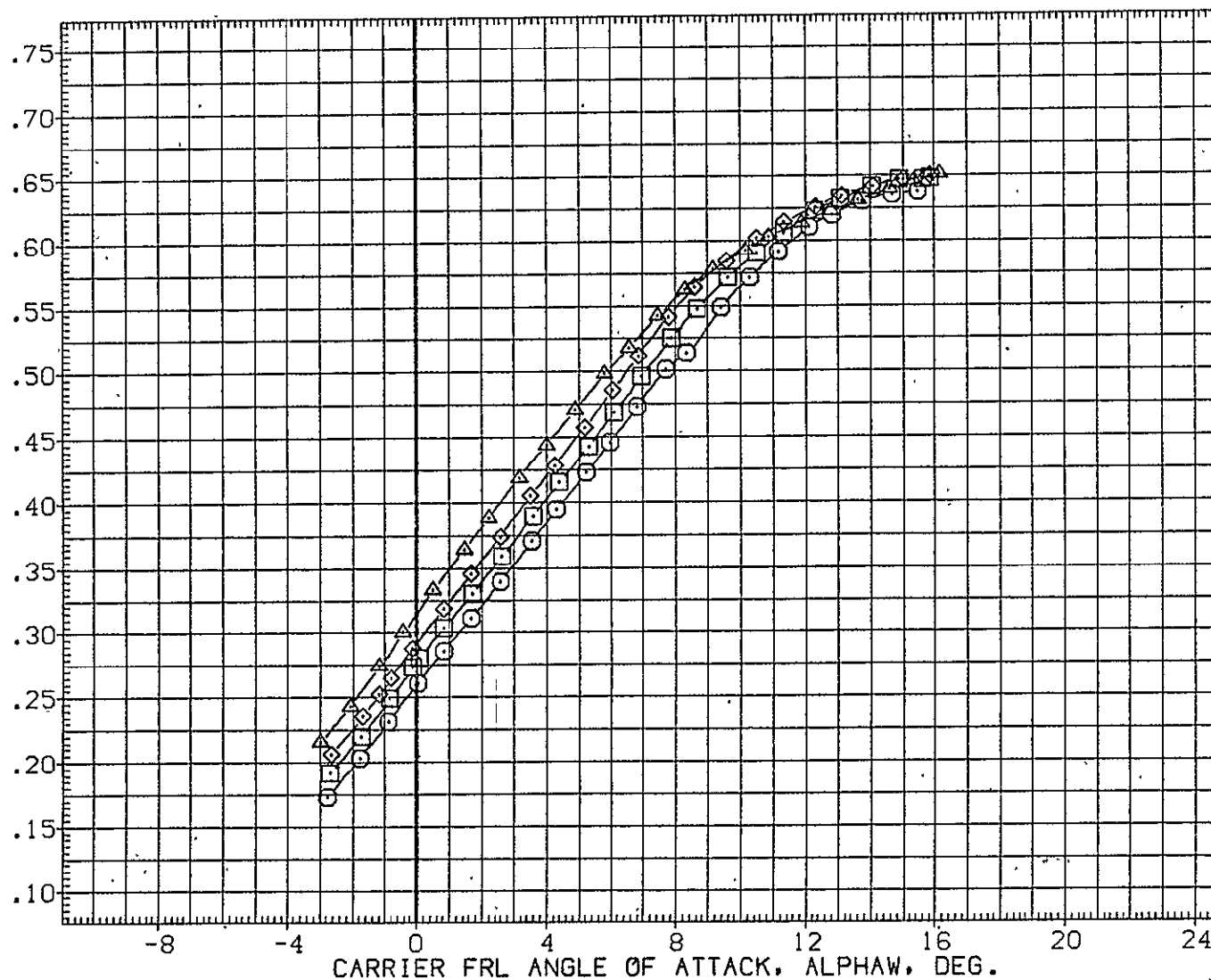


FIG. 52 747+0RB(8 DEG)+TIP FINS, FLAPS UP LAUNCH, NO SPEED BRAKES

0RB

SYMBOL	MACH	PARAMETRIC VALUES			
○	.301	BETA	.000	STAB	1.000
□	.501	RUD-U	.000	ELV-1B	.000
◇	.600	ELV-0B	3.000	S1-2	.000
△	.700	S3-4	.000	S5-6	.000
		10RB	7.850	0RBELV	.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN. X0
YMRP	.0000	IN. Y0
ZMRP	375.0000	IN. Z0
SCALE	.0300	

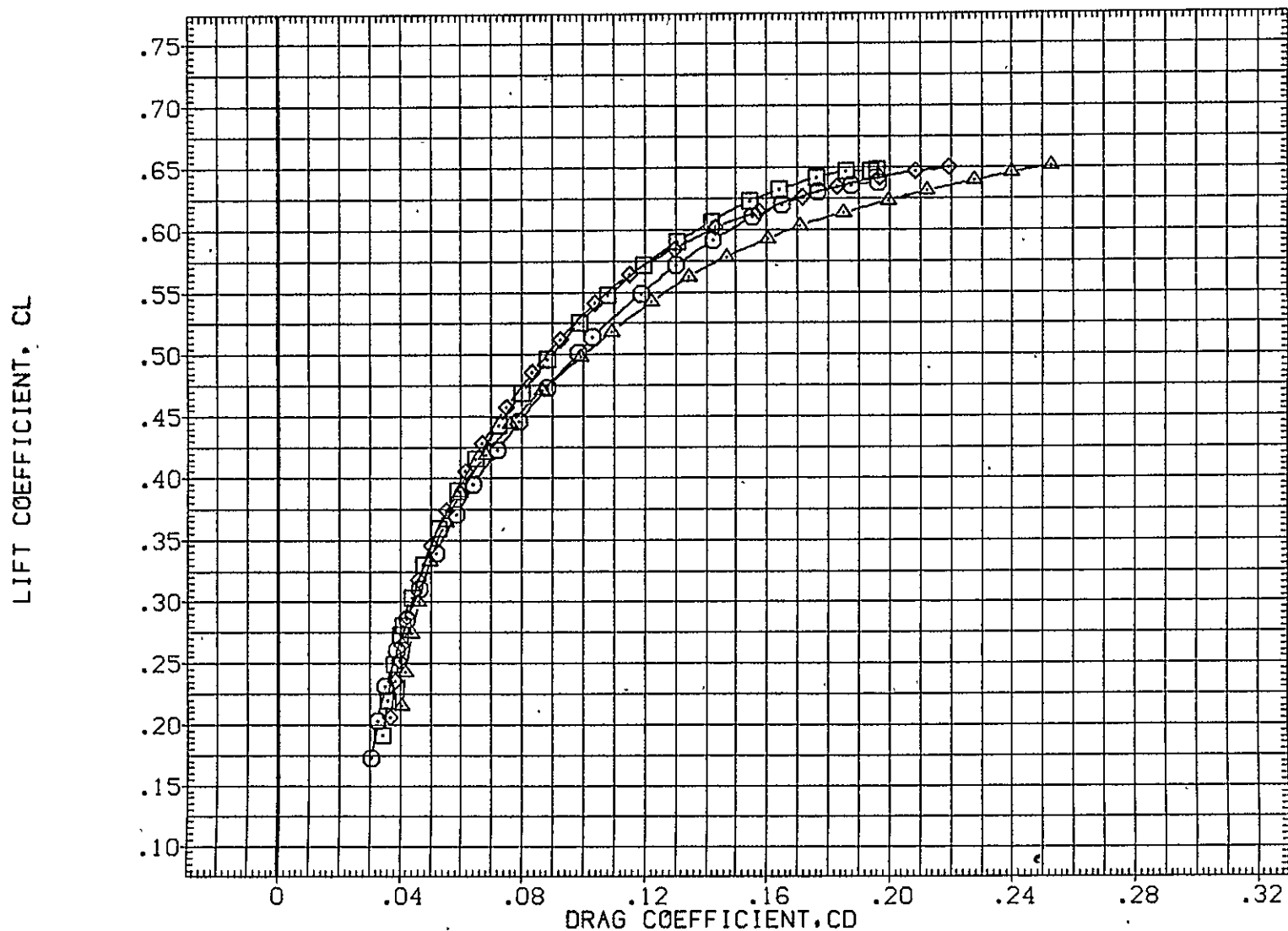


FIG. 52 747+0RB(8 DEG)+TIP FINS, FLAPS UP LAUNCH, NO SPEED BRAKES

0RB

CA5 ORB TC5 AT38.2 (PRES. K1 FO H15.6 V9.1)(YGM090)						
SYMBOL	MACH	PARAMETRIC VALUES			REFERENCE INFORMATION	
○	.301	BETA	.000	STAB	1.000	SREF 2690.0000 SQ.FT.
□	.501	RUD-U	.000	ELV-1B	.000	LREF 474.8100 IN.
◇	.600	ELV-0B	3.000	S1-2	.000	BREF 936.6800 IN.
△	.700	S3-4	.000	SS-6	.000	XMRP 1109.0000 IN. X0
		10RB	7.850	ORBELV	.000	YMRP .0000 IN. Y0
						ZMRP .375.0000 IN. Z0
						SCALE .0300

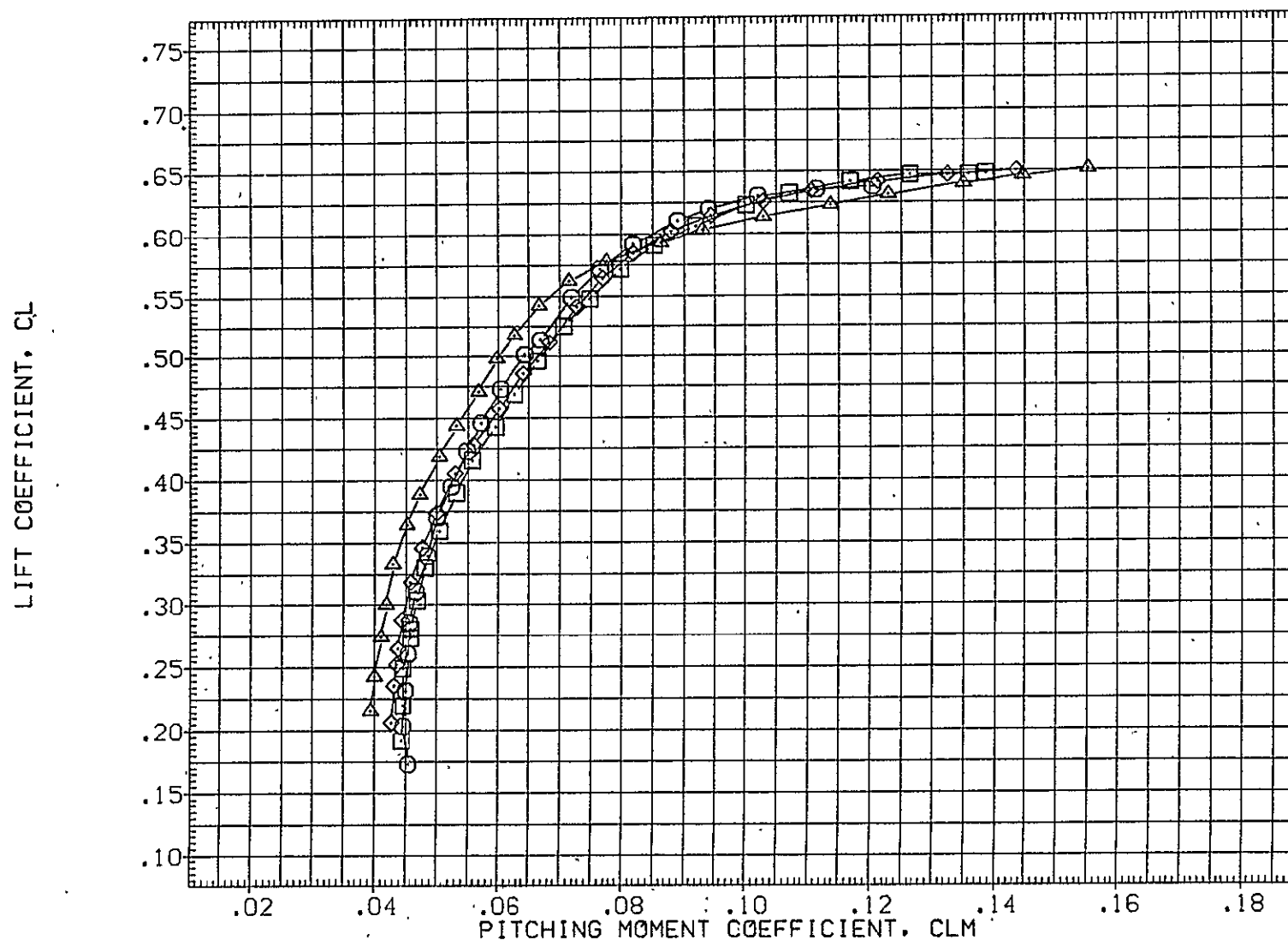


FIG. 52 747+ORB(8 DEG)+TIP FINS, FLAPS UP LAUNCH, NO SPEED BRAKES

ORB

SYMBOL	MACH	PARAMETRIC VALUES				REFERENCE INFORMATION		
○	.301	BETA	.000	STAB	1.000	SREF	2690.0000	SQ.FT.
□	.501	RUD-U	.000	ELV-1B	.000	LREF	474.8100	IN.
◇	.600	ELV-0B	3.000	S1-2	.000	BREF	936.6800	IN.
△	.700	S3-4	.000	S5-6	.000	XMRP	1109.0000	IN. X0
		10RB	7.850	ORBELV	.000	YMRP	.0000	IN. Y0
						ZMRP	375.0000	IN. Z0
						SCALE	.0300	

CARRIER FRL ANGLE OF ATTACK, ALPHA, DEG.

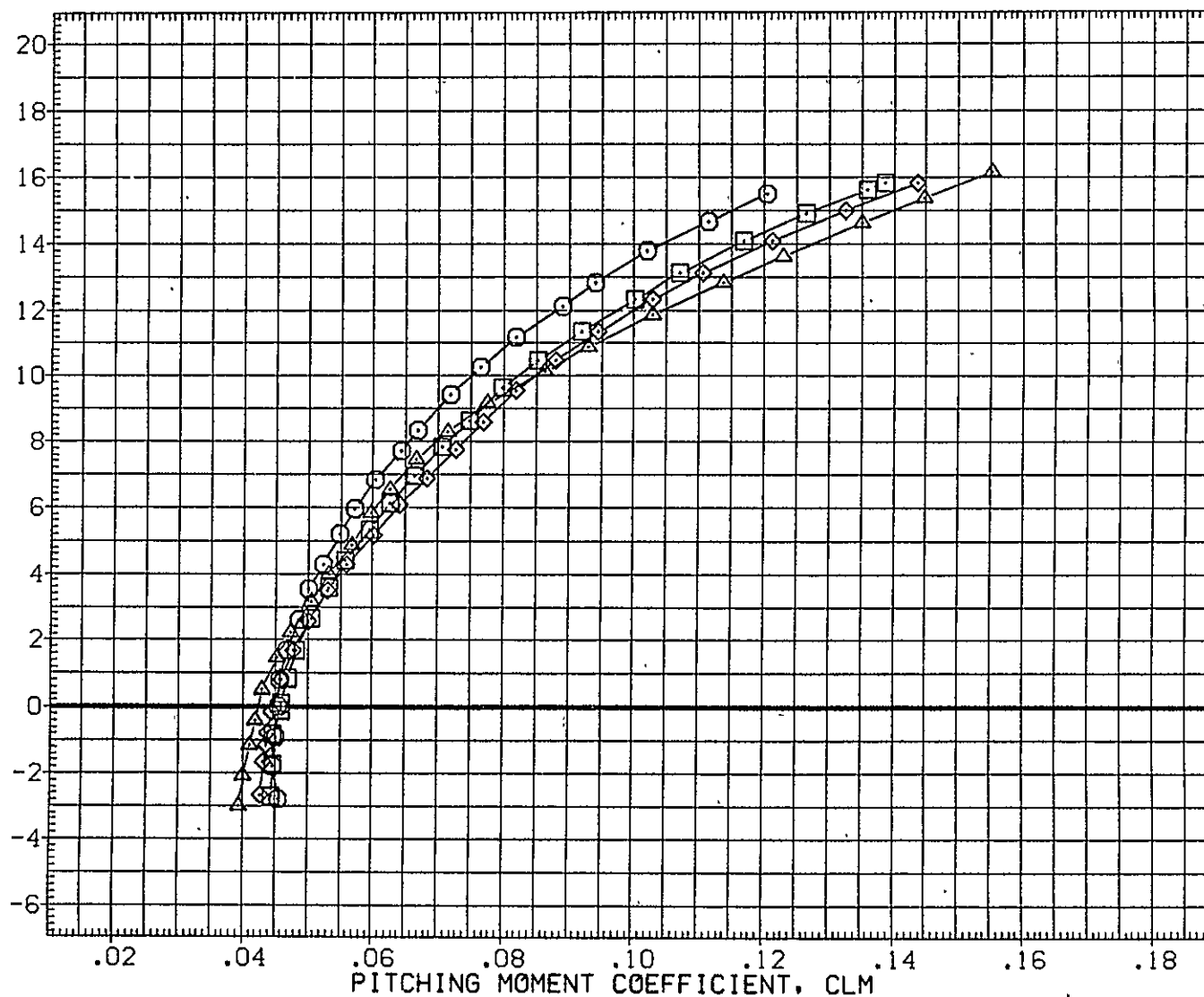


FIG. 52 747+0RB(8 DEG)+TIP FINS, FLAPS UP LAUNCH, NO SPEED BRAKES

0RB

CA5 K1 FO H15.6 V9.1 (PLUS. 0RB NOZ AT38.2)(RGM091)

SYMBOL	MACH	PARAMETRIC VALUES				REFERENCE INFORMATION		
○	.300	BETA	.000	STAB	-2.000	SREF	5500.0000	50.FT.
□	.500	RUD-U	.000	RUD-L	.000	LREF	327.8000	IN.
◇	.600	ELV-IB	.000	ELV-OB	3.000	BREF	2348.0000	IN.
△	.700	S1-2	.000	S3-4	45.000	XMRP	1339.9100	IN. XC
		S5-6	20.000	10RB	7.850	YMRP	.0000	IN. YC
						ZMRP	190.7500	IN. ZC
						SCALE	.0300	

LIFT COEFFICIENT, CL

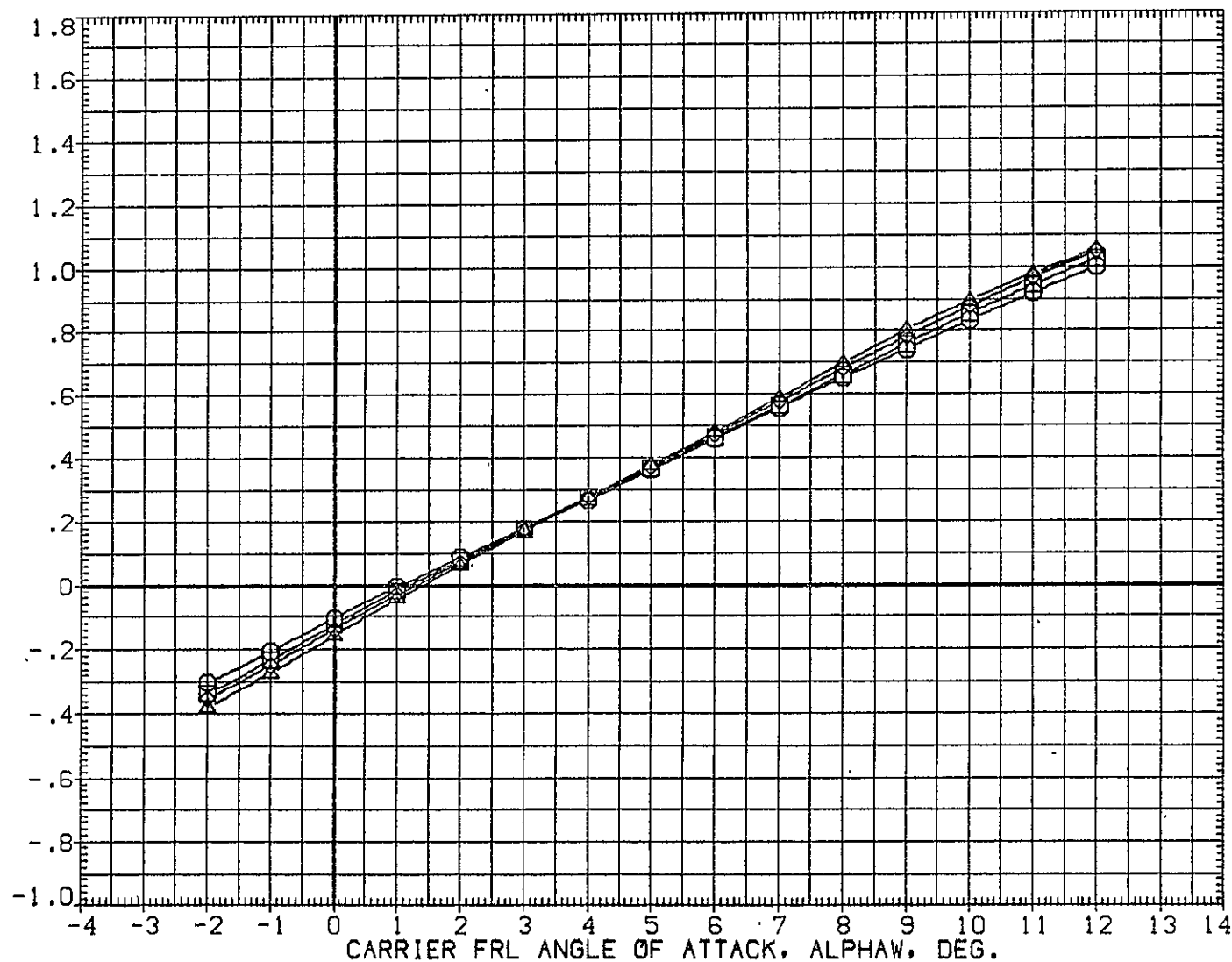


FIG. 53 747+0RB(8 DEG)+TIP FINS+STD SPD BRK, FLAPS UP(S=-2) TAIL CONE OFF TOTAL
PAGE 209

SYMBOL	MACH	PARAMETRIC VALUES				REFERENCE INFORMATION		
○	.300	BETA	.000	STAB	-2.000	SREF	5500.0000	SQ.FT.
□	.500	RUD-U	.000	RUD-L	.000	LREF	327.8000	IN.
◇	.600	ELV-1B	.000	ELV-OB	3.000	BREF	2348.0000	IN.
△	.700	S1-2	.000	S3-4	45.000	XMRP	1339.9100	IN. XC
		S5-6	20.000	10RB	7.850	YMRP	.0000	IN. YC
						ZMRP	190.7500	IN. ZC
						SCALE	.0300	

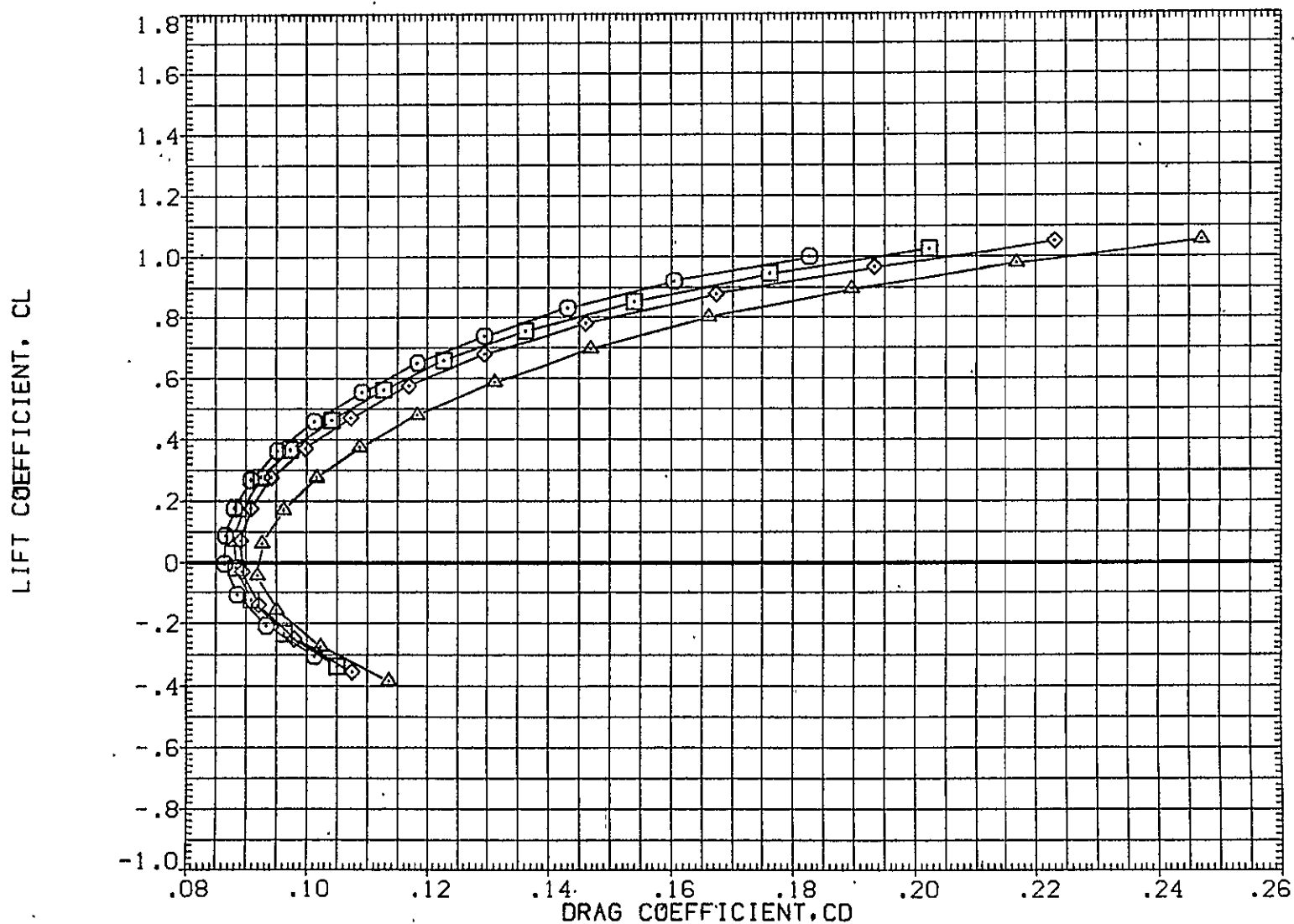


FIG. 53 747+ORB(8 DEG)+TIP FINS+STD SPD BRK,FLAPS UP(S=-2) TAIL CONE OFF TOTAL

CA5 K1 F0 H15.6 V9.1 (PLUS. ORB NOZ AT38.2)(RGM091)

SYMBOL	MACH	PARAMETRIC VALUES			
○	.300	BETA	.000	STAB	-2.000
□	.500	RUD-U	.000	RUD-L	.000
◇	.600	ELV-1B	.000	ELV-0B	3.000
△	.700	S1-2	.000	S3-4	45.000
		S5-6	20.000	I0RB	7.950

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

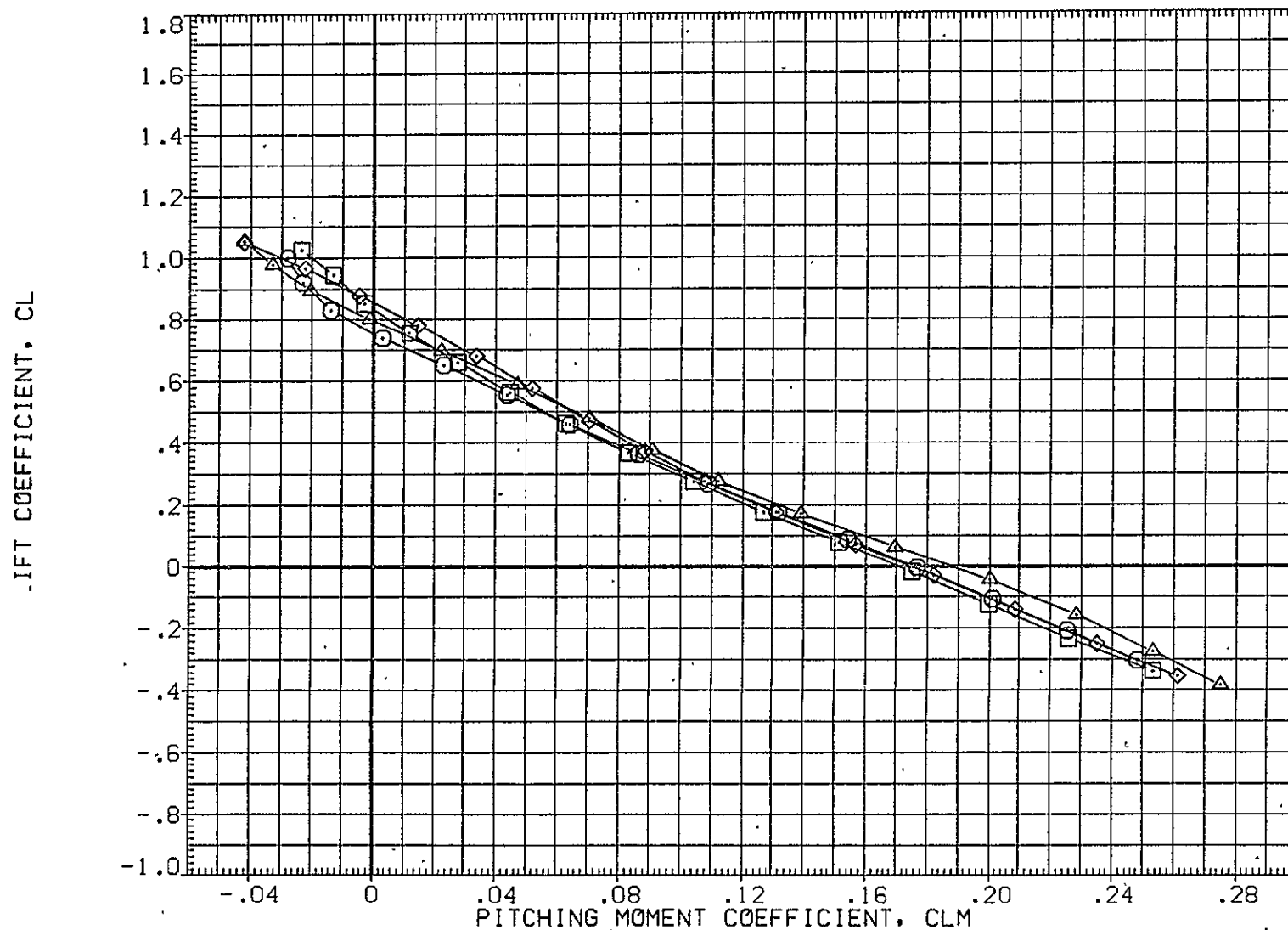


FIG. 53 747+ORB(8 DEG)+TIP FINS+STD SPD BRK,FLAPS UP(S=-2) TAIL CONE OFF TOTAL

SYMBOL
○
□
◇
△

MACH

PARAMETRIC VALUES

.300	BETA	.000	STAB	-2.000
.500	RUD-U	.000	RUD-L	.000
.600	ELV-1B	.000	ELV-0B	3.000
.700	S1-2	.000	S3-4	45.000
	S5-6	20.000	10RB	7.850

REFERENCE INFORMATION

SREF	5500.0000	SQ.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XM RP	1339.9100	IN. XC
YM RP	.0000	IN. YC
ZM RP	190.7500	IN. ZC
SCALE	.0300	

CARRIER FRL ANGLE OF ATTACK, ALPHAW, DEG.

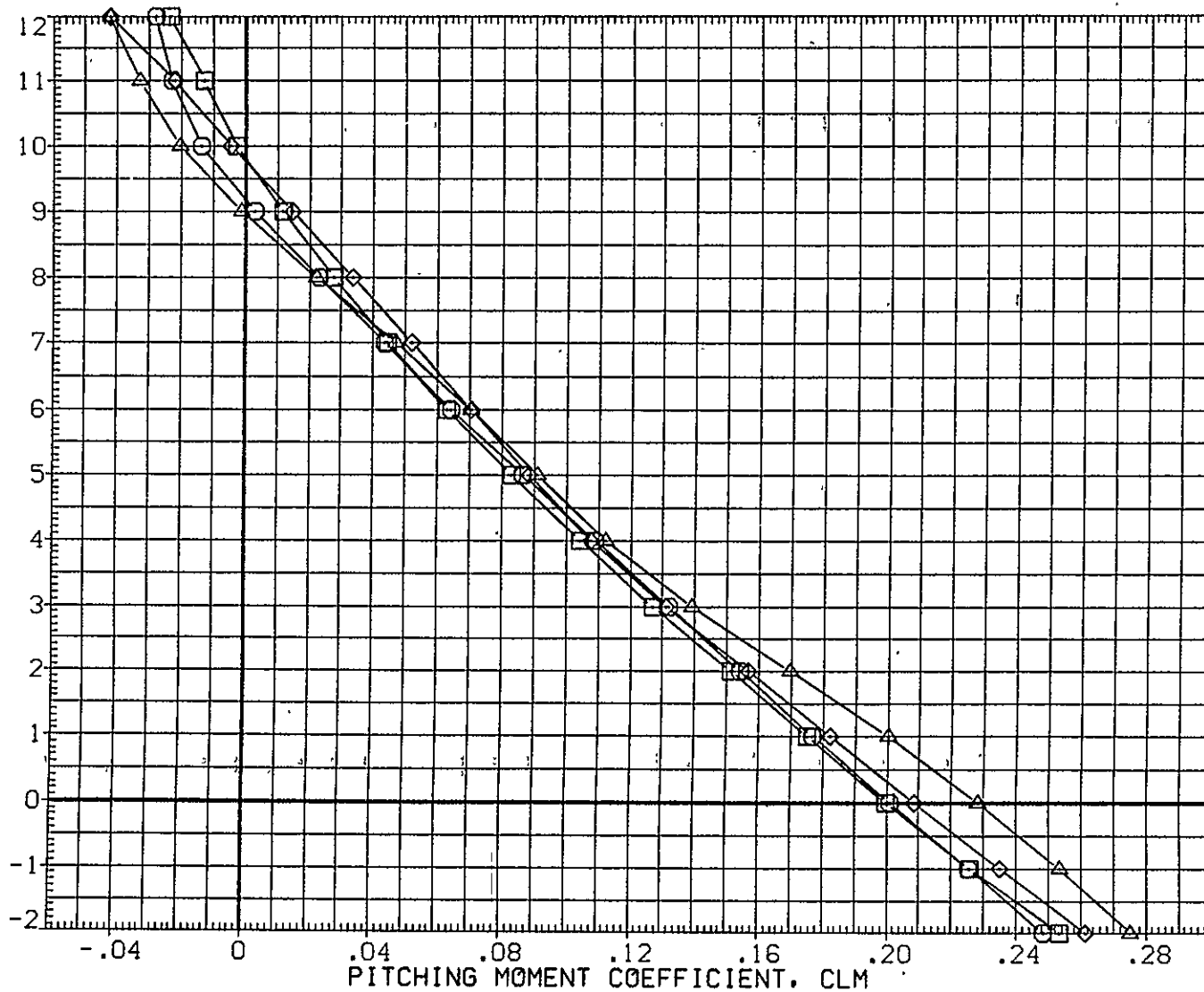


FIG. 53 747+ORB(8 DEG)+TIP FINS+STD SPD BRK, FLAPS UP(S=-2) TAIL CONE OFF TOTAL

CA5 K1 FO H15.6 V9.1 MINUS ORB NOZ AT38.2 (BGM091)

SYMBOL
○
□
◇
△

MACH	PARAMETRIC VALUES			
.300	BETA	.000	STAB	-2.000
.500	RUD-U	.000	RUD-L	.000
.600	ELV-IB	.000	ELV-OB	3.000
.700	SI-2	.000	S3-4	45.000
	S5-6	20.000	IORB	7.850

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

INCREMENTAL LIFT FORCE COEFFICIENT(STABILITY AXIS), DCL

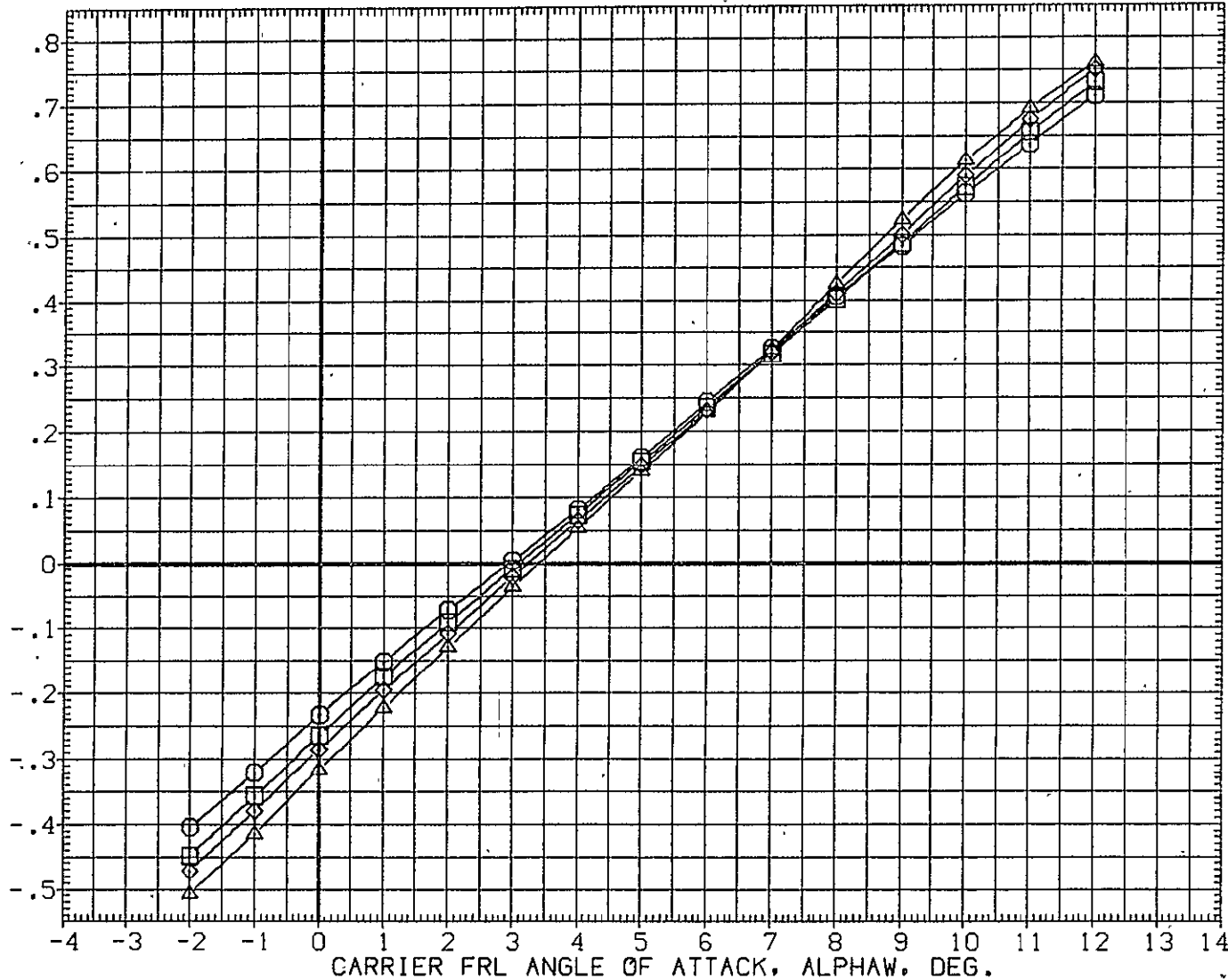


FIG. 54 747+ORB(8 DEG)+TIP FINS+STD SPD BRK, FLAPS UP(S=-2) TAIL CONE OFF 747

SYMBOL	MACH	PARAMETRIC VALUES				REFERENCE INFORMATION		
○	.300	BETA	.000	STAB	-2.000	SREF	5500.0000	SQ.FT.
□	.500	RUD-U	.000	RUD-L	.000	LREF	327.8000	IN.
◇	.600	ELV-1B	.000	ELV-OB	3.000	BREF	2348.0000	IN.
△	.700	S1-2	.000	S3-4	45.000	XMRP	1339.9100	IN. XC
		S5-6	20.000	10RB	7.850	YMRP	.0000	IN. YC
						ZMRP	190.7500	IN. ZC
						SCALE	.0300	

INCREMENTAL LIFT FORCE COEFFICIENT(STABILITY AXIS), DCL

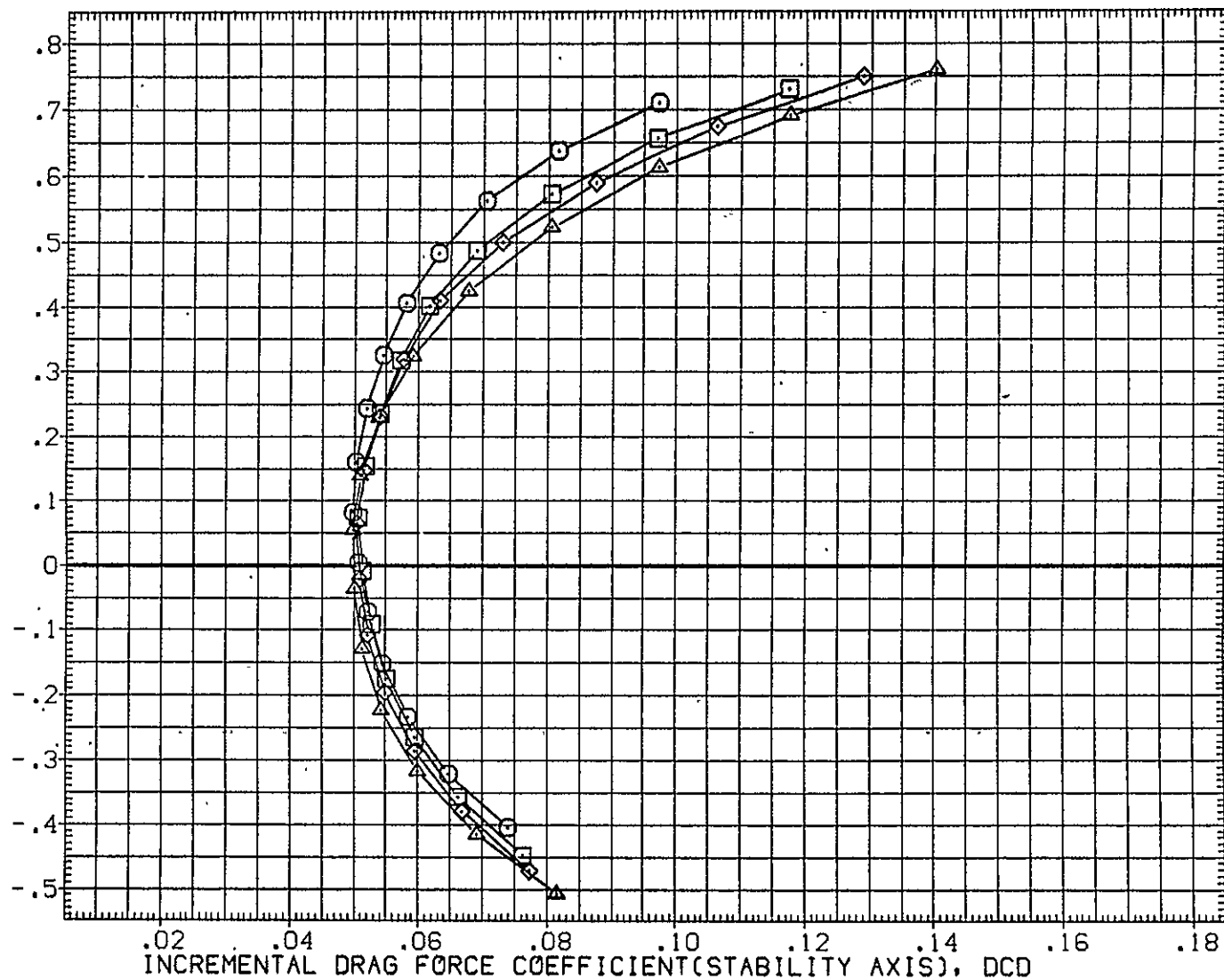


FIG. 54 747+ORB(8 DEG)+TIP FINS+STD SPD BRK, FLAPS UP(S=-2) TAIL CONE OFF 747

CA5 K1 F0 H15.6 V9.1 MINUS 0RB N0Z AT38.2 (BGM091)

SYMBOL
○
□
◇
△

MACH

.300

BETA

PARAMETRIC VALUES

.000

STAB

-2.000

RUD-U

.000

RUD-L

.000

ELV-1B

.000

ELV-0B

3.000

S1-2

.000

S3-4

45.000

S5-6

20.000

10RB

7.850

REFERENCE INFORMATION

SREF	5500.0000	SQ.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XM RP	1339.9100	IN. XC
YM RP	.0000	IN. YC
ZM RP	190.7500	IN. ZC
SCALE	.0300	

INCREMENTAL LIFT FORCE COEFFICIENT(STABILITY AXIS), DCL

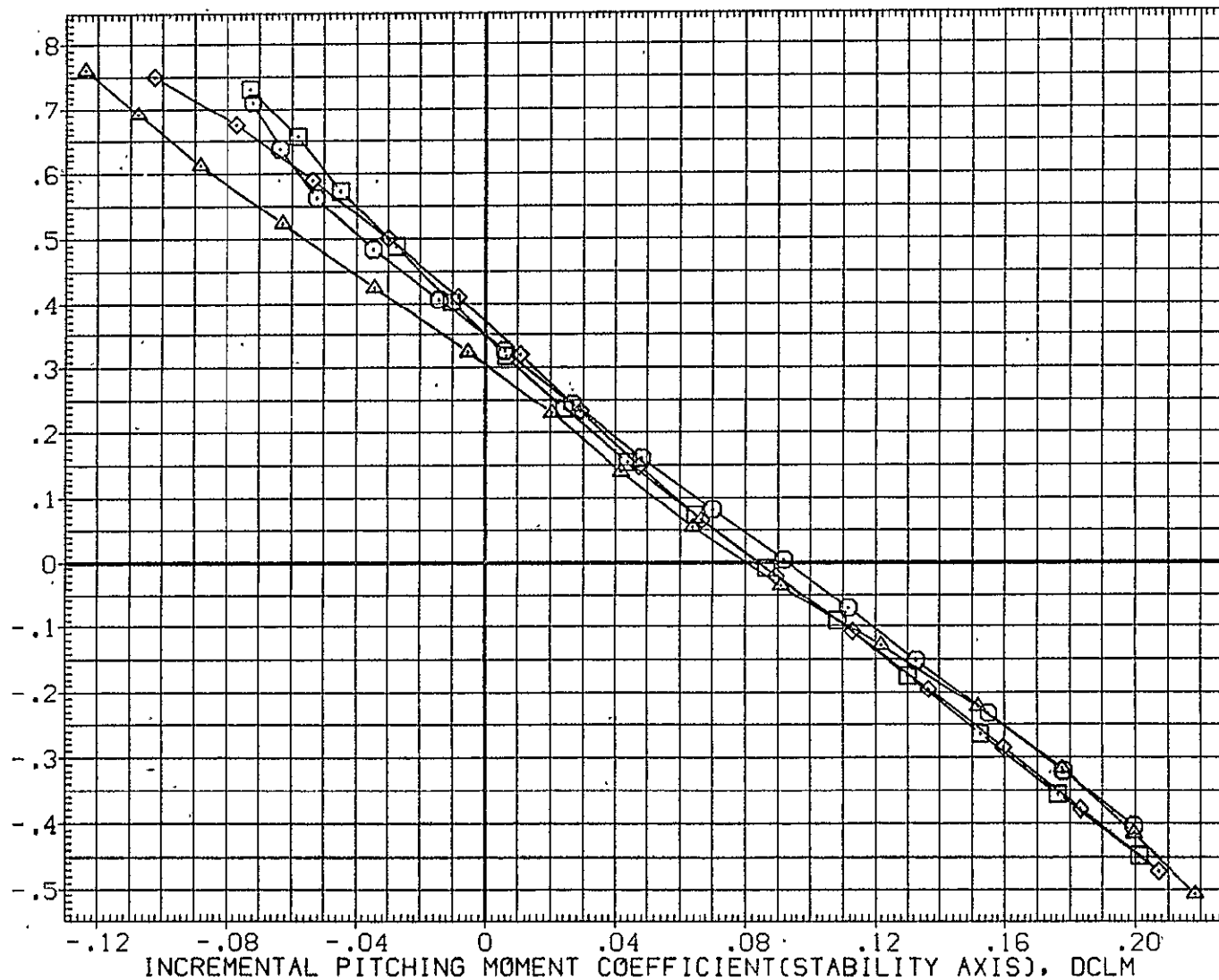


FIG. 54 747+0RB(8 DEG)+TIP FINS+STD SPD BRK, FLAPS UP(S=-2) TAIL CONE OFF 747

SYMBOL

MACH

PARAMETRIC VALUES

REFERENCE INFORMATION

○
□
◇
△

.300	BETA	.000	STAB	-2.000
.500	RUD-U	.000	RUD-L	.000
.600	ELV-1B	.000	ELV-0B	3.000
.700	S1-2	.000	S3-4	45.000
	S5-6	20.000	10RB	7.850

SREF	5500.0000	SQ.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XM RP	1339.9100	IN. XC
YM RP	.0000	IN. YC
ZM RP	190.7500	IN. ZC
SCALE	.0300	

CARRIER FRL ANGLE OF ATTACK, ALPHA, DEG.

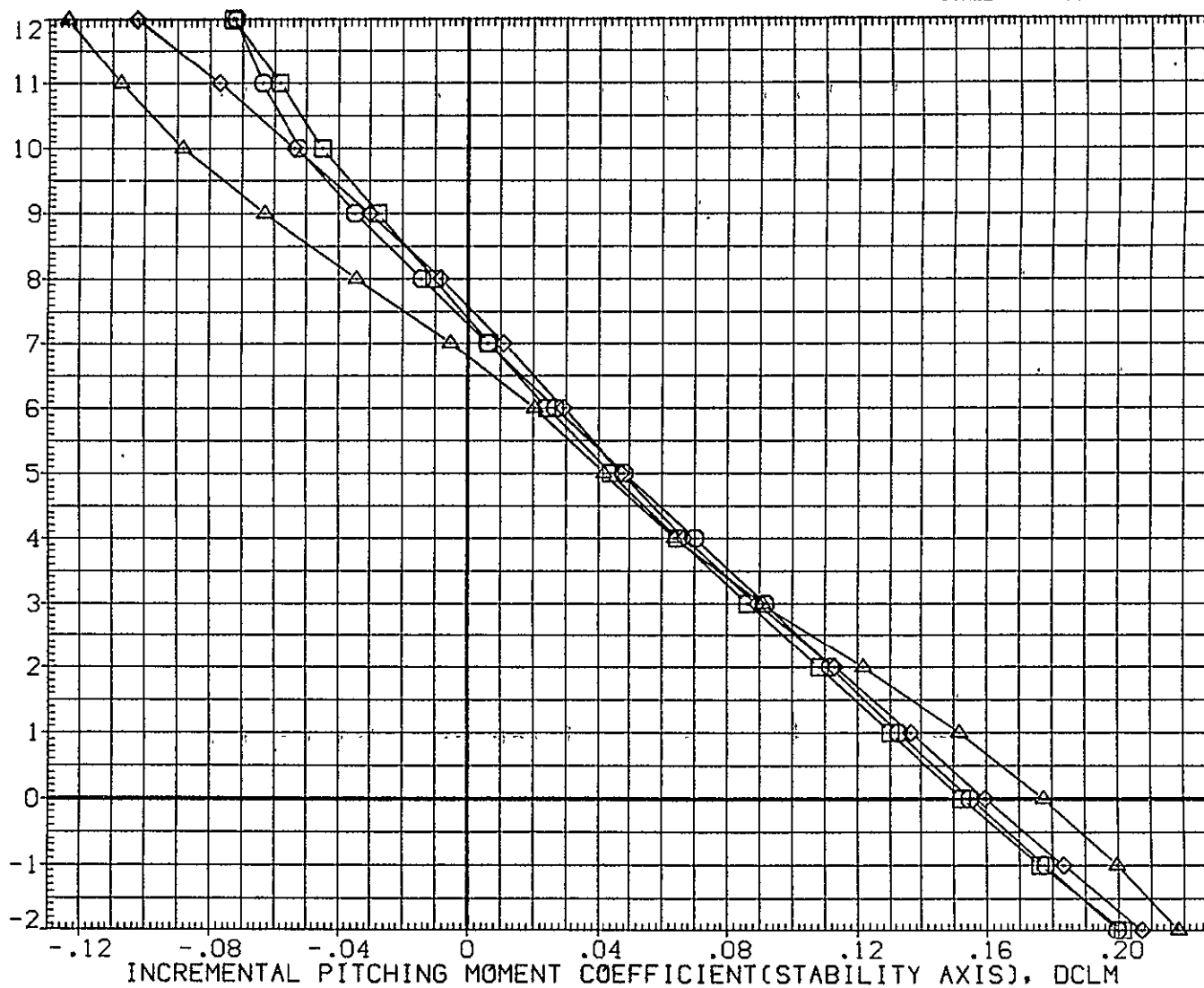


FIG. 54 747+0RB(8 DEG)+TIP FINS+STD SPD BRK, FLAPS UP(S=-2) TAIL CONE OFF 747

CA5 0RB NOZ AT38.2 (PRES..K1 FO H15.6 V9.1)(YGM091)

SYMBOL

MACH

PARAMETRIC VALUES

○
□
◇
△

.301	BETA	.000	STAB	-2.000
.500	RUD-U	.000	RUD-L	.000
.601	ELV-1B	.000	ELV-0B	3.000
.699	S1-2	.000	S3-4	45.000
	S5-6	20.000	10RB	7.850

REFERENCE INFORMATION

SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN. X0
YMRP	.0000	IN. Y0
ZMRP	375.0000	IN. Z0
SCALE	.0300	

LIFT COEFFICIENT, CL

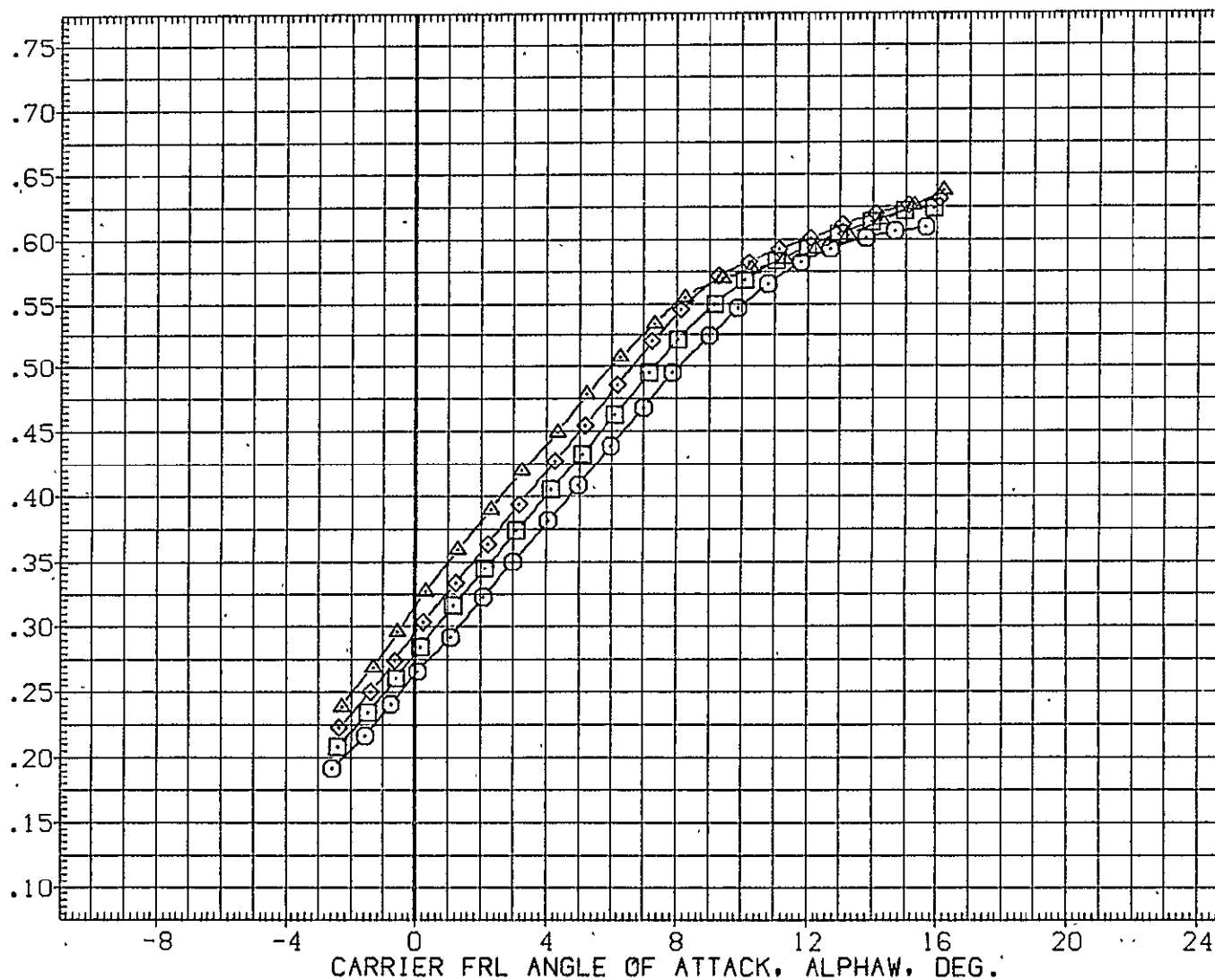


FIG. 55 747+0RB(8 DEG)+TIP FINS+STD SPD BRK, FLAPS UP(S=-2) TAIL CONE OFF 0RB

SYMBOL	MACH	PARAMETRIC VALUES				REFERENCE INFORMATION		
○	.301	BETA	.000	STAB	-2.000	SREF	2690.0000	SQ. FT.
□	.500	RUD-U	.000	RUD-L	.000	LREF	474.8100	IN.
◇	.601	ELV-1B	.000	ELV-0B	3.000	BREF	936.6800	IN.
△	.699	S1-2	.000	S3-4	45.000	XMRP	1109.0000	IN. X0
		S5-6	20.000	10RB	7.850	YMRP	.0000	IN. Y0
						ZMRP	375.0000	IN. Z0
						SCALE	.0300	

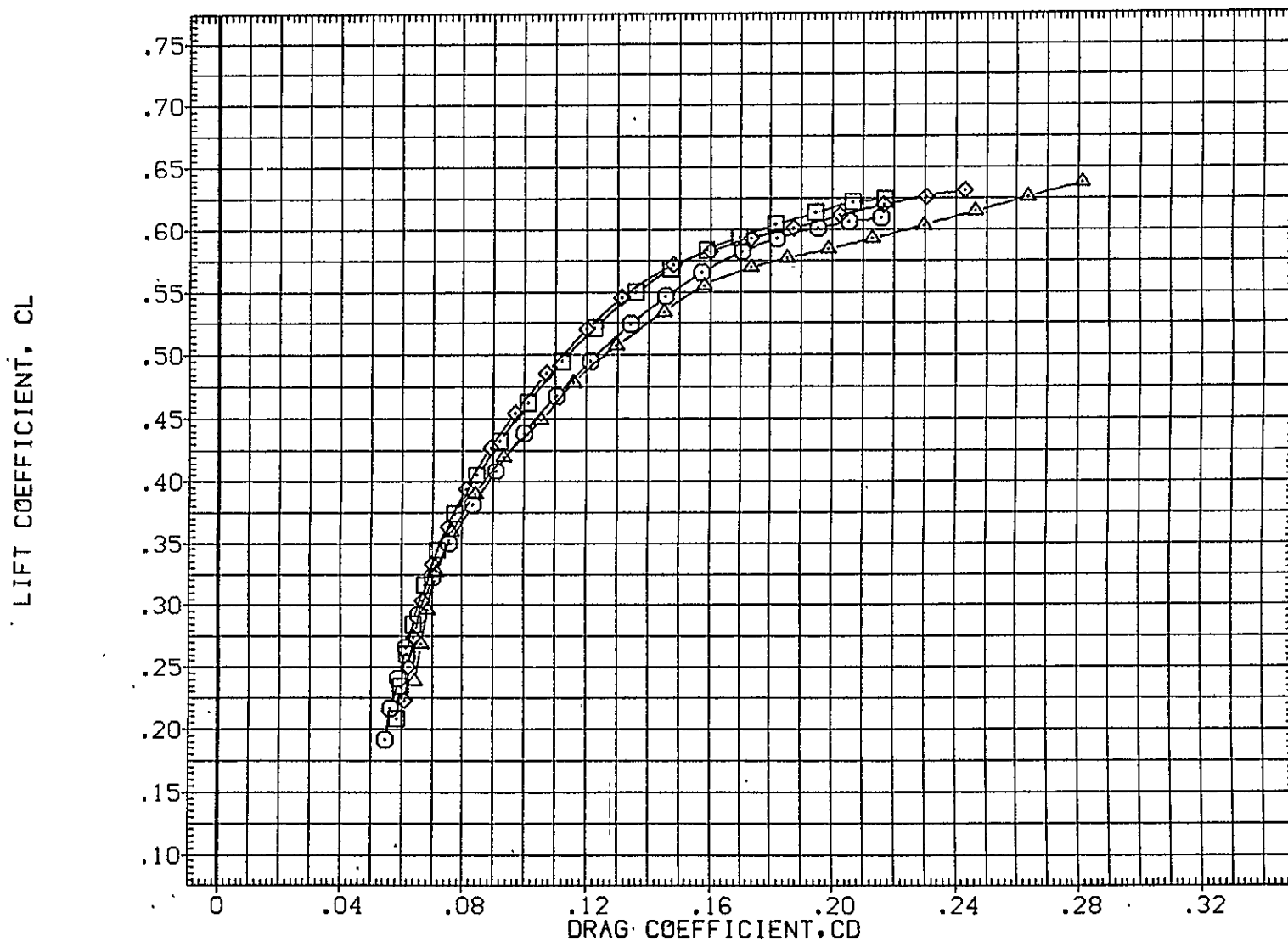


FIG. 55 747+0RB(8 DEG)+TIP FINS+STD SPD BRK, FLAPS UP(S=-2) TAIL CONE OFF 0RB

CA5 ORB NOZ AT38.2 (PRES. K1 FO H15.6 V9.1)(YGM091)

SYMBOL	MACH	PARAMETRIC VALUES				REFERENCE INFORMATION		
○	.301	BETA	.000	STAB	-2.000	SREF	2690.0000	SQ.FT.
□	.500	RUD-U	.000	RUD-L	.000	LREF	474.8100	IN.
◇	.601	ELV-1B	.000	ELV-OB	3.000	BREF	936.6800	IN.
△	.699	S1-2	.000	S3-4	45.000	XMRP	1109.0000	IN. X0
		S5-6	20.000	IORB	7.850	YMRP	.0000	IN. Y0
						ZMRP	375.0000	IN. Z0
						SCALE	.0300	

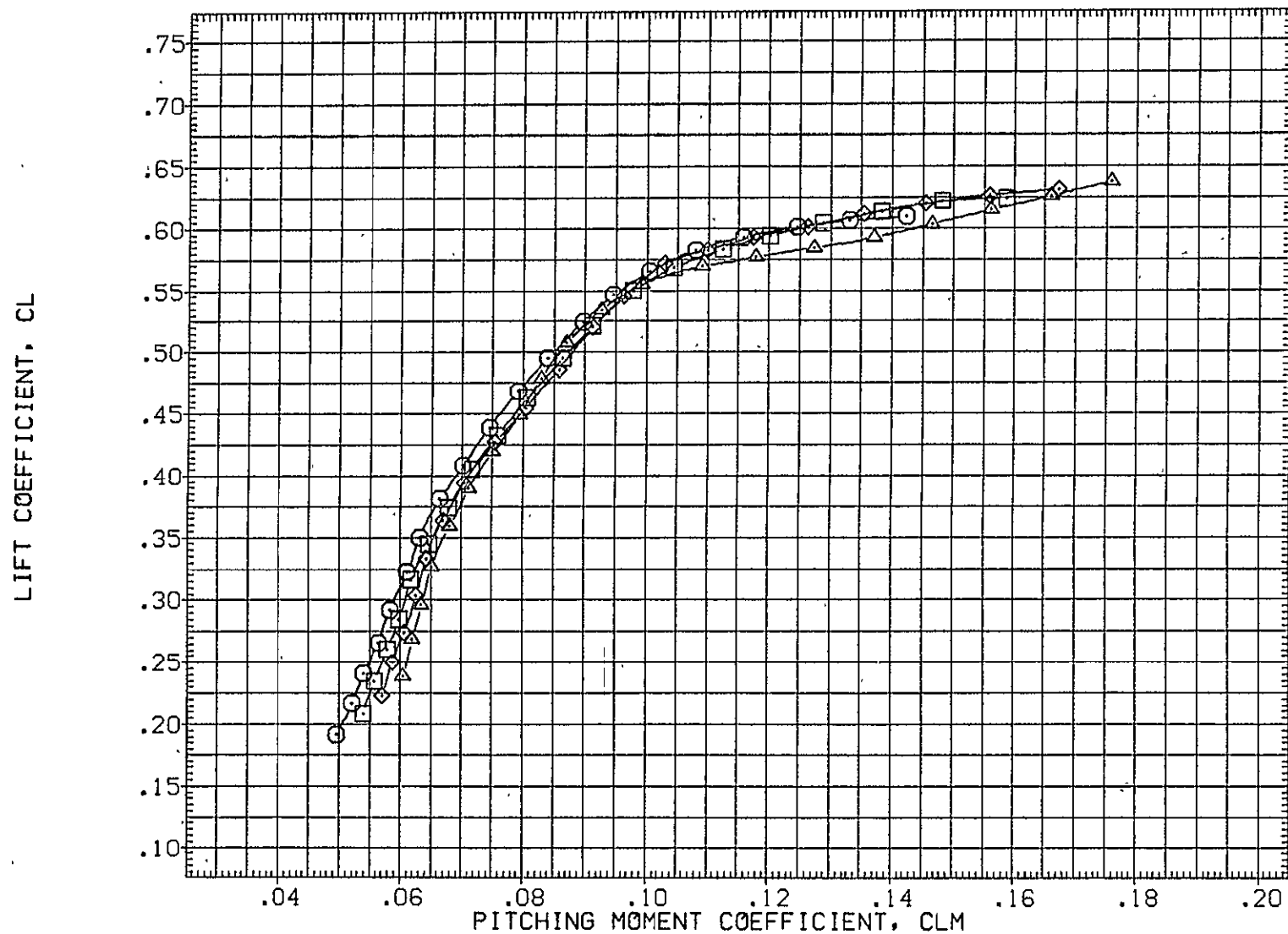


FIG. 55 747+ORB(8 DEG)+TIP FINS+STD SPD BRK,FLAPS UP(S=-2) TAIL CONE OFF ORB

SYMBOL	MACH	PARAMETRIC VALUES			
○	.301	BETA	.000	STAB	-2.000
□	.500	RUD-U	.000	RUD-L	.000
◇	.601	ELV-1B	.000	ELV-0B	3.000
△	.699	S1-2	.000	S3-4	45.000
		S5-6	20.000	10RB	7.850

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN. X0
YMRP	.0000	IN. Y0
ZMRP	375.0000	IN. Z0
SCALE	.0300	

CARRIER FRL ANGLE OF ATTACK, ALPHA, DEG.

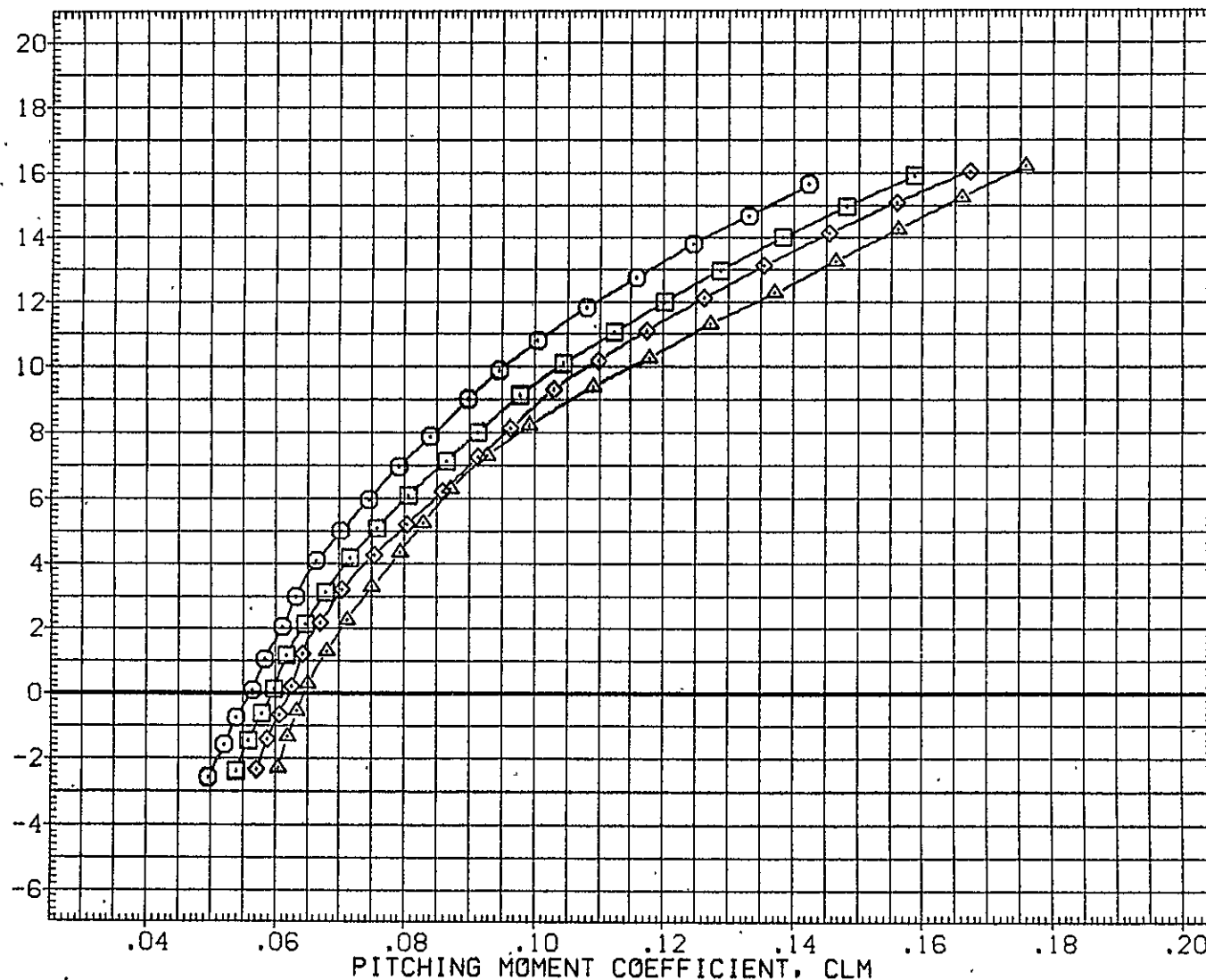


FIG. 55 747+0RB(8 DEG)+TIP FINS+STD SPD BRK,FLAPS UP(S=-2) TAIL CONE OFF 0RB

CA5 K1 F0 H15.6 V9.1 (PLUS. 0RB NOZ AT38.2)(RGM092)

SYMBOL	MACH	PARAMETRIC VALUES				REFERENCE INFORMATION		
		BETA	.000	STAB	1.000	SREF	5500.0000	SQ.FT.
○	.300	RUD-U	.000	RUD-L	.000	LREF	327.8000	IN.
□	.500	ELV-IB	.000	ELV-OB	3.000	BREF	2348.0000	IN.
◇	.600	SI-2	.000	S3-4	45.000	XMRP	1339.9100	IN. XC
△	.700	SS-6	20.000	10RB	7.850	YMRP	.0000	IN. YC
						ZMRP	190.7500	IN. ZC
						SCALE	.0300	

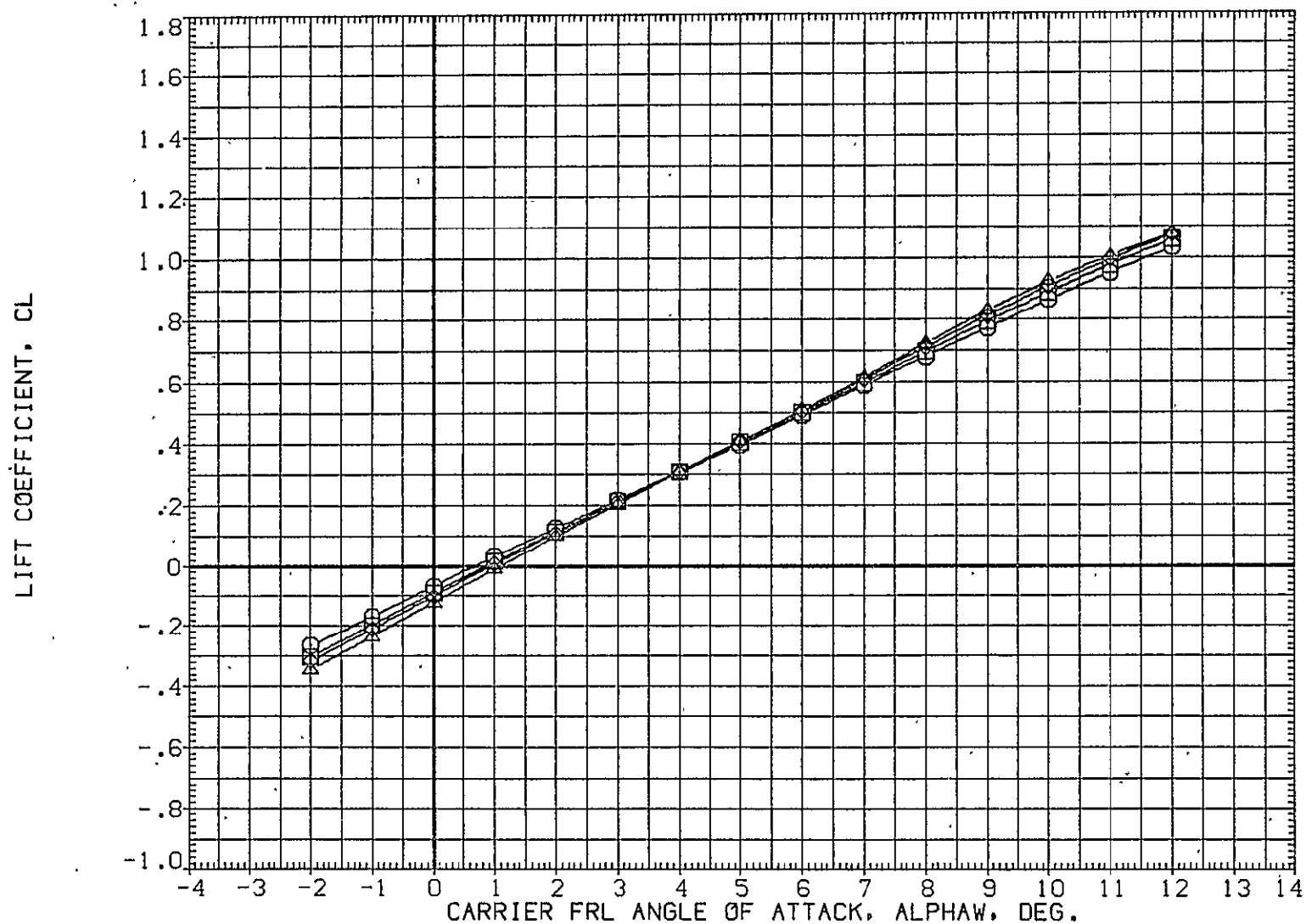


FIG. 56 747+0RB(8 DEG)+TIP FINS+STD SPD BRK, FLAPS UP LAUNCH (S=+1)

TOTAL

SYMBOL	MACH	PARAMETRIC VALUES			
○	.300	BETA	.000	STAB	1.000
□	.500	RUD-U	.000	RUD-L	.000
◇	.600	ELV-1B	.000	ELV-0B	3.000
△	.700	S1-2	.000	S3-4	45.000
		S5-6	20.000	10RB	7.850

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

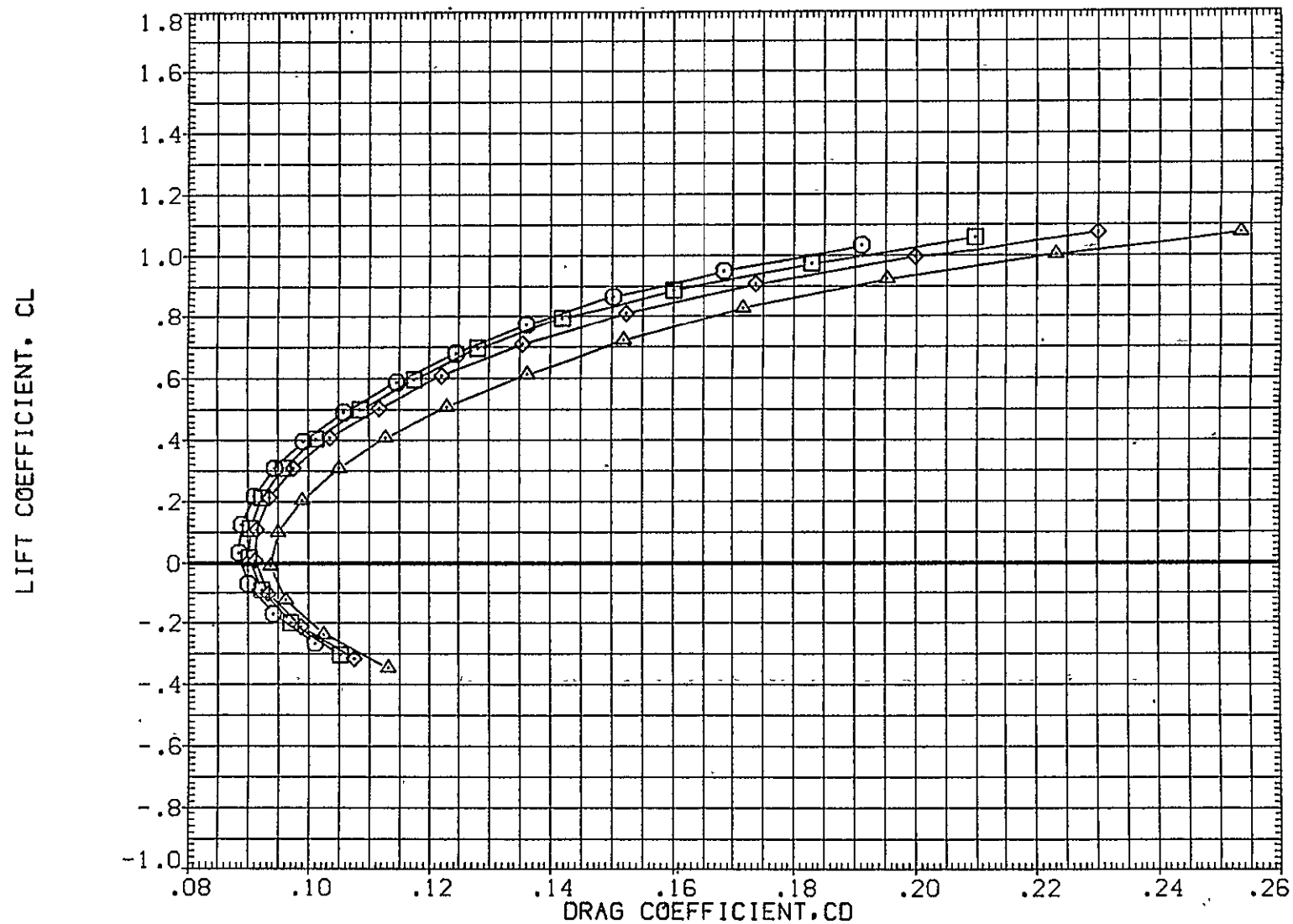


FIG. 56 747+ORB(8 DEG)+TIP FINS+STD SPD BRK, FLAPS UP LAUNCH (S=+1)

TOTAL

CA5 K1 FO H15.6 V9.1 (PLUS. ORB NOZ AT38.2)(RGM092)

SYMBOL	MACH	PARAMETRIC VALUES				REFERENCE INFORMATION		
○	.300	BETA	.000	STAB	1.000	SREF	5500.0000	SQ.FT.
□	.500	RUD-U	.000	RUD-L	.000	LREF	327.8000	IN.
◇	.600	ELV-IB	.000	ELV-OB	3.000	BREF	2348.0000	IN.
△	.700	S1-2	.000	S3-4	45.000	XMRP	1339.9100	IN. XC
		S5-6	20.000	ICRB	7.850	YMRP	.0000	IN. YC
						ZMRP	190.7500	IN. ZC
						SCALE	.0300	

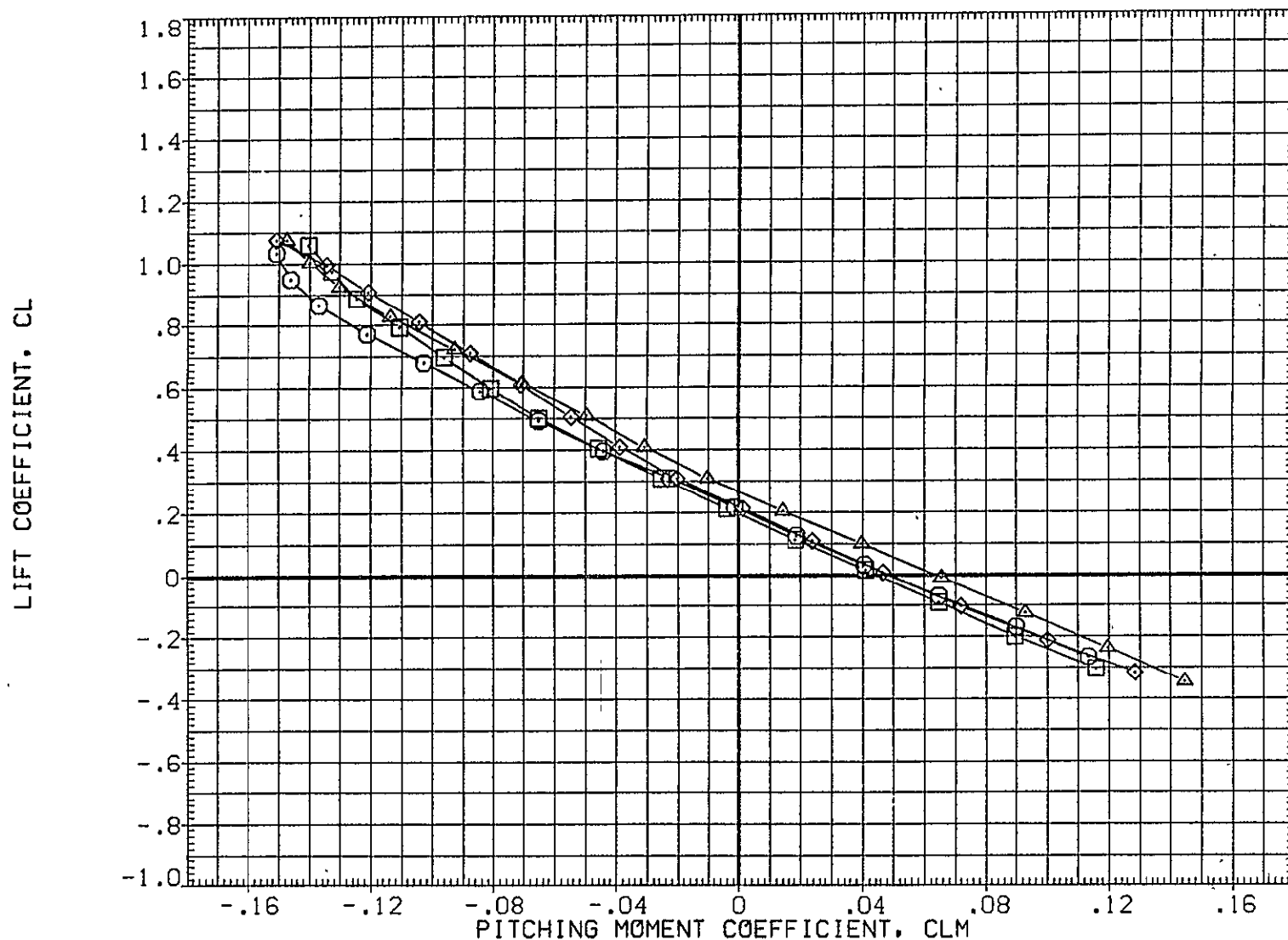


FIG. 56 747+ORB(8 DEG)+TIP FINS+STD SPD BRK, FLAPS UP LAUNCH (S=+1)

TOTAL

SYMBOL	MACH	PARAMETRIC VALUES				REFERENCE INFORMATION		
		BETA	.000	STAB	1.000	SREF	5500.0000	SQ.FT.
○	.500	RUD-U	.000	RUD-L	.000	LREF	327.8000	IN.
◇	.600	ELV-1B	.000	ELV-0B	3.000	BREF	2348.0000	IN.
△	.700	S1-2	.000	S3-4	45.000	XMRP	1339.9100	IN. XC
		S5-6	20.000	10RB	7.850	YMRP	.0000	IN. YC
						ZMRP	190.7500	IN. ZC
						SCALE	.0300	

CARRIER FRL ANGLE OF ATTACK, ALPHA, DEG.

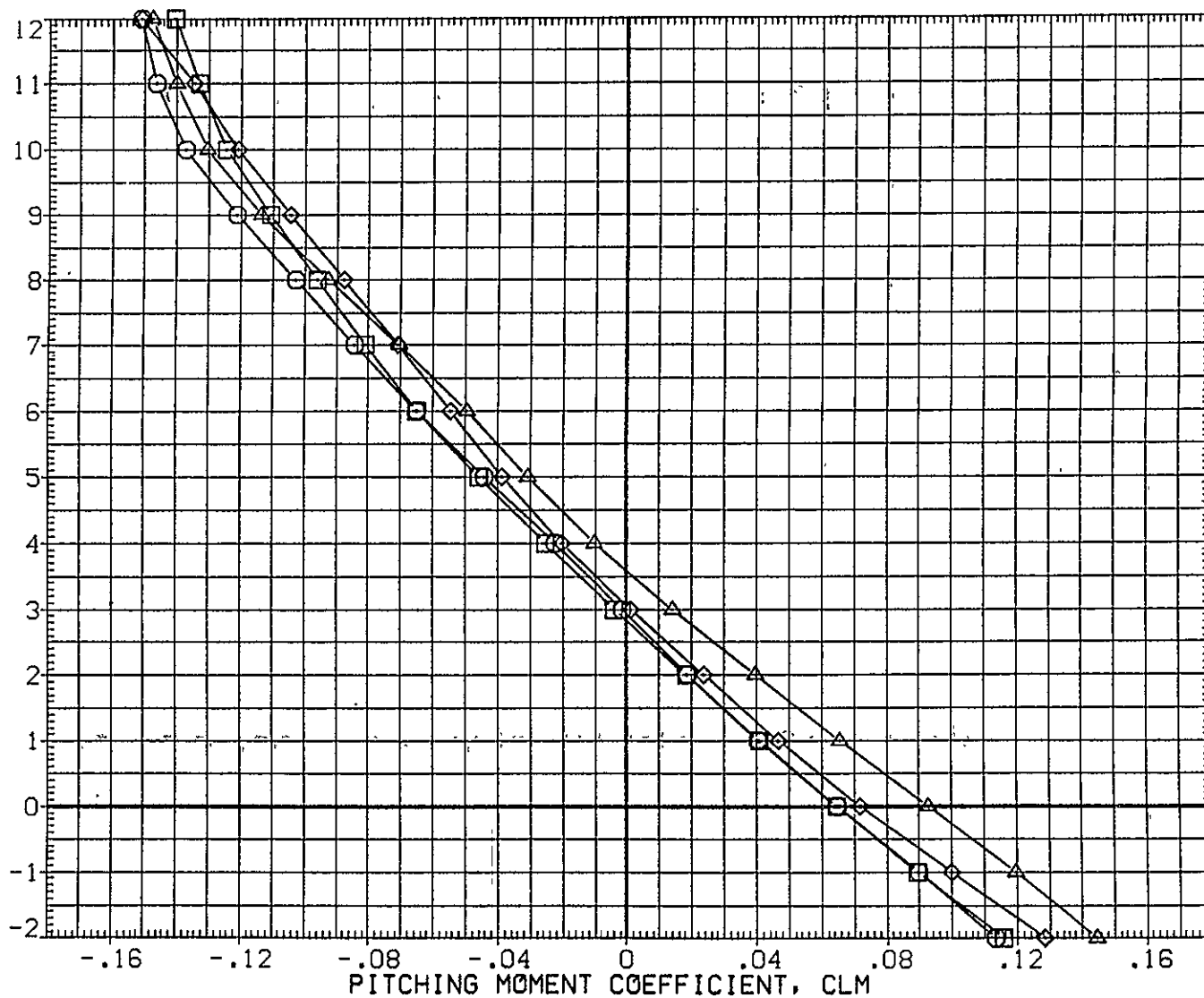


FIG. 56 747+0RB(8 DEG)+TIP FINS+STD SPD BRK, FLAPS UP LAUNCH (S=+1)

TOTAL

CA5 K1 F0 H15.6 V9.1 MINUS 0RB NOZ AT38.2 (BGM092)

SYMBOL
○
□
◇
△

MACH

.300
.500
.600
.700

BETA
RUD-U
ELV-1B
S1-2
S5-6

PARAMETRIC VALUES

.000 STAB 1.000
.000 RUD-L .000
.000 ELV-0B 3.000
.000 S3-4 45.000
20.000 10RB 7.850

REFERENCE INFORMATION

SREF 5500.0000 SQ.FT.
LREF 327.8000 IN.
BREF 2348.0000 IN.
XMRP 1339.9100 IN. XC
YMRP .0000 IN. YC
ZMRP 190.7500 IN. ZC
SCALE .0300

INCREMENTAL LIFT FORCE COEFFICIENT(STABILITY AXIS), DCL

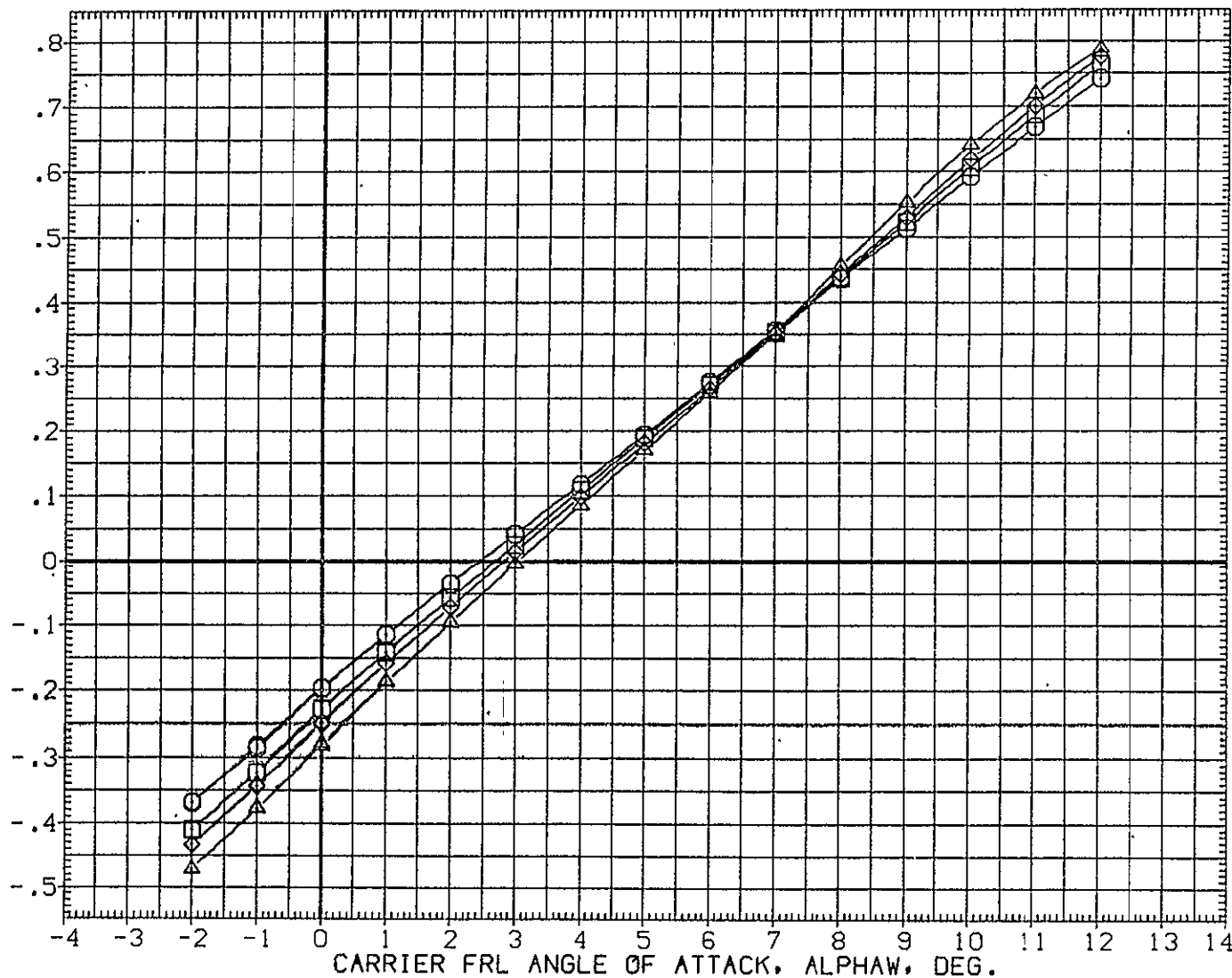


FIG. 57 747+0RB(8 DEG)+TIP FINS+STD SPD BRK, FLAPS UP LAUNCH (S=+1)

747

SYMBOL	MACH	PARAMETRIC VALUES				REFERENCE INFORMATION		
○	.300	BETA	.000	STAB	1.000	SREF	5500.0000	SQ.FT.
□	.500	RUD-U	.000	RUD-L	.000	LREF	327.8000	IN.
◇	.600	ELV-1B	.000	ELV-OB	3.000	BREF	2348.0000	IN.
△	.700	S1-2	.000	S3-4	45.000	XMRP	1339.9100	IN. XC
		S5-6	20.000	10RB	7.850	YMRP	.0000	IN. YC
						ZMRP	190.7500	IN. ZC
						SCALE	.0300	

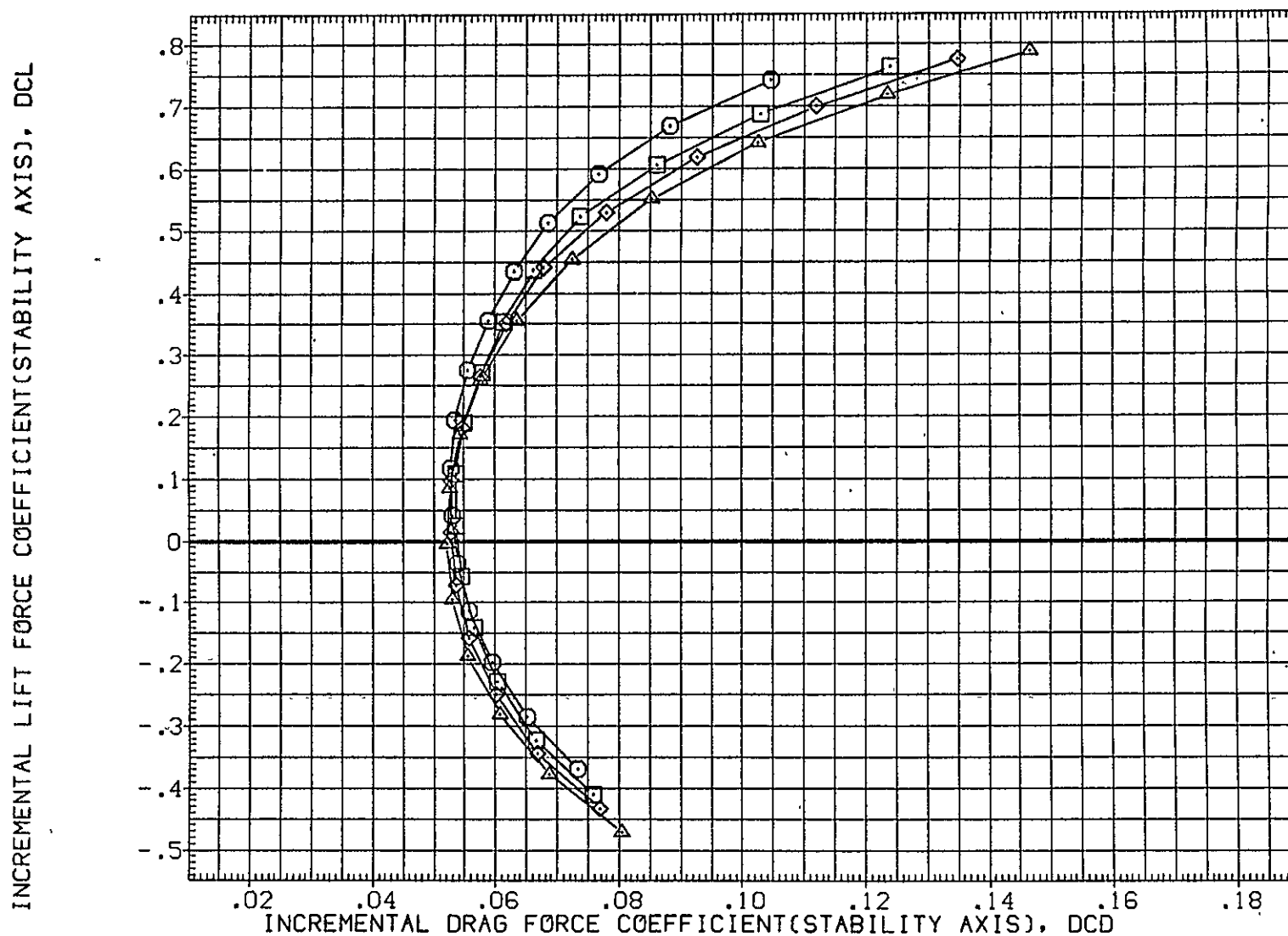


FIG. 57 747+ORB(8 DEG)+TIP FINS+STD SPD BRK, FLAPS UP LAUNCH (S=+1)

747

CA5 K1 F0 H15.6 V9.1 MINUS ORB NOZ AT38.2 (BGM092)

SYMBOL
○
□
◇
△

MACH

.300
.500
.600
.700

BETA
RUD-U
ELV-1B
S1-2
S5-6

PARAMETRIC VALUES

.000 STAB 1.000
.000 RUD-L .000
.000 ELV-0B 3.000
.000 S3-4 45.000
20.000 IORB 7.850

REFERENCE INFORMATION

SREF 5500.0000 SQ.FT.
LREF 327.8000 IN.
BREF 2348.0000 IN.
XMRP 1339.9100 IN. XC
YMRP .0000 IN. YC
ZMRP 190.7500 IN. ZC
SCALE .0300

INCREMENTAL LIFT FORCE COEFFICIENT(STABILITY AXIS), DCL

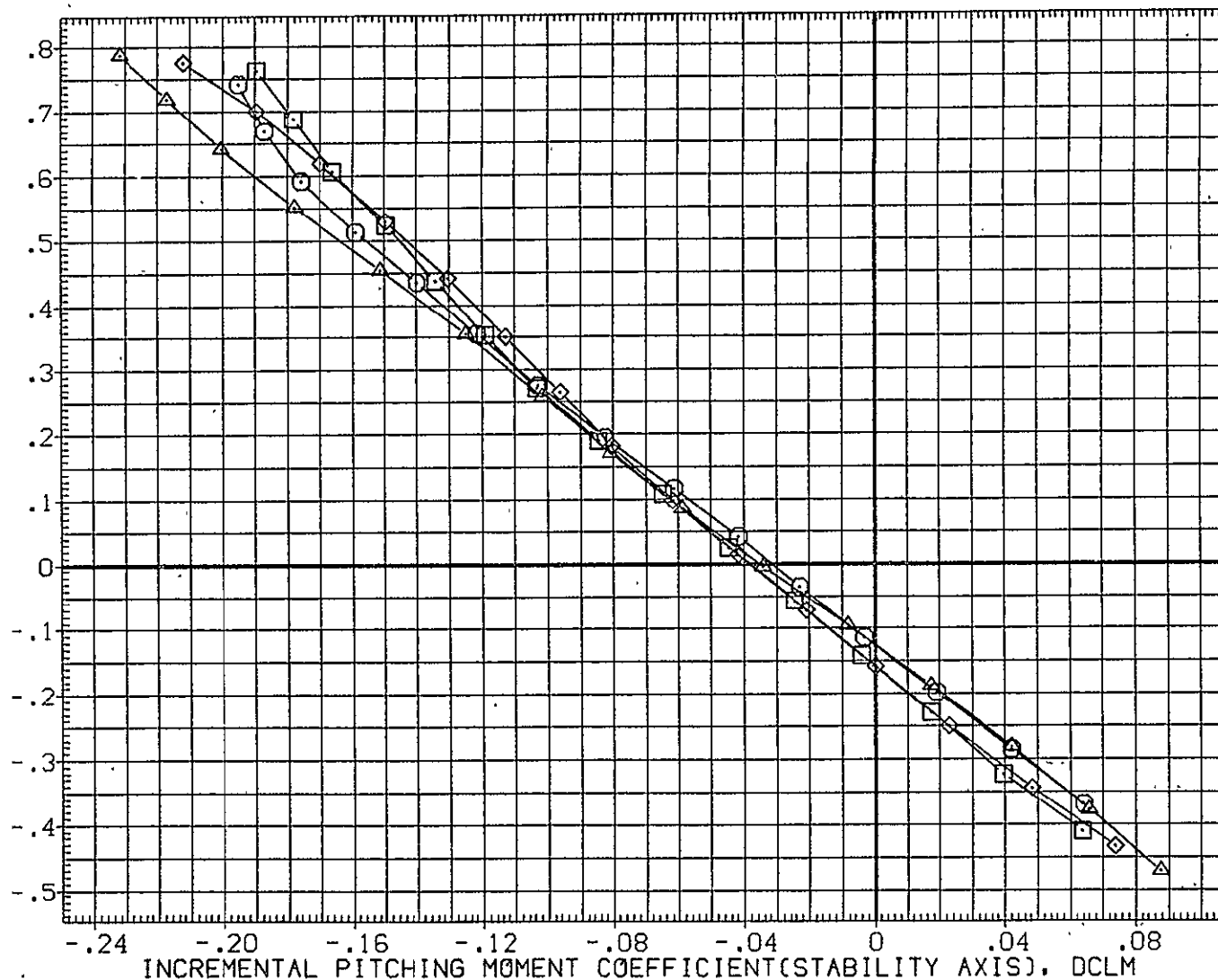


FIG. 57 747+ORB(8 DEG)+TIP FINS+STD SPD BRK, FLAPS UP LAUNCH (S=+1)

747

SYMBOL	MACH	PARAMETRIC VALUES			
○	.300	BETA	.000	STAB	1.000
□	.500	RUD-U	.000	RUD-L	.000
◇	.600	ELV-1B	.000	ELV-0B	3.000
△	.700	S1-2	.000	S3-4	45.000
		S5-6	20.000	10RB	7.850

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

CARRIER FRL ANGLE OF ATTACK, ALPHA, DEG.

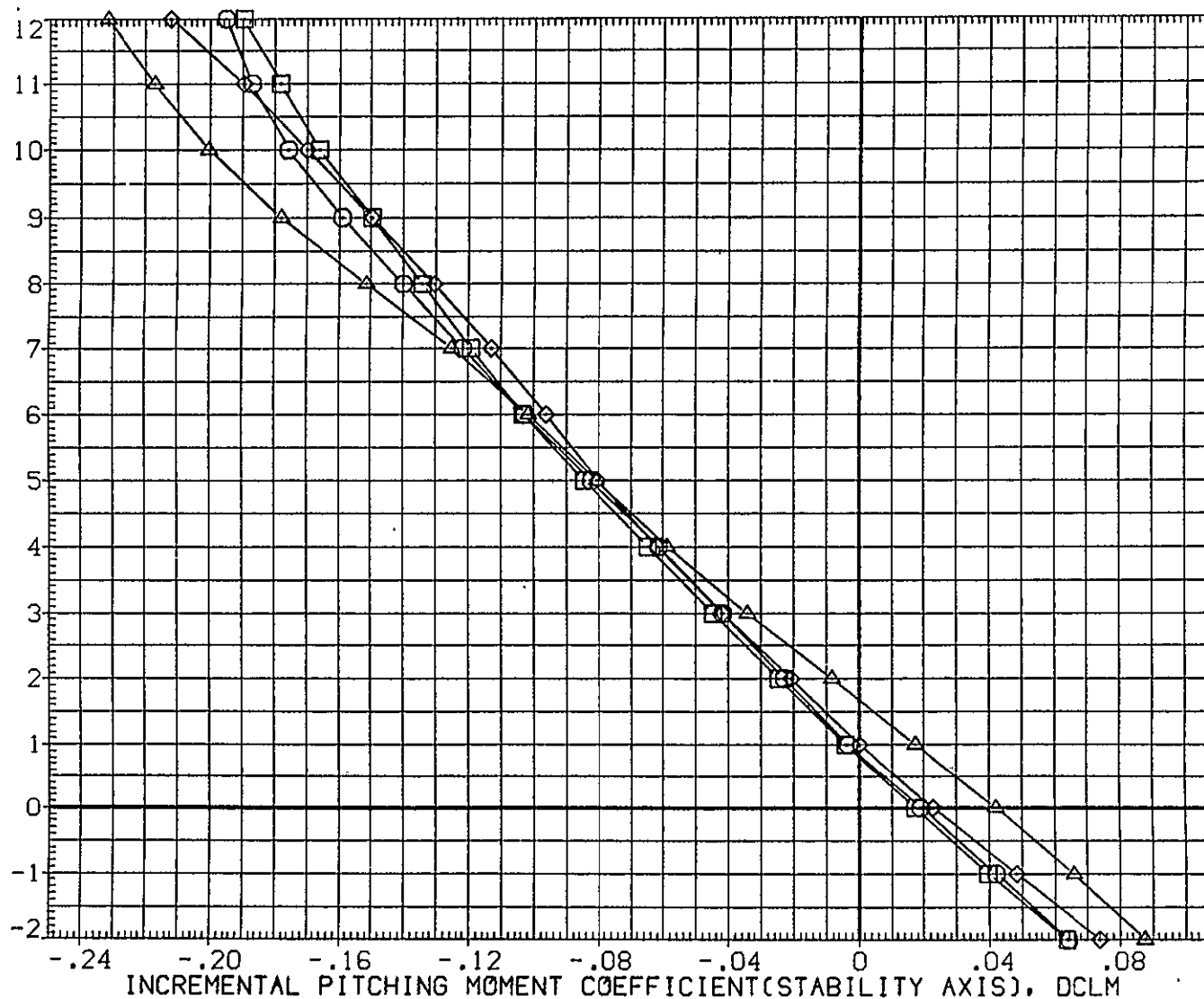


FIG. 57 747+0RB(8 DEG)+TIP FINS+STD SPD BRK, FLAPS UP LAUNCH (S=+1)

747

CA5 ORB NOZ AT38.2 (PRES. K1 F0 H15.6 V9.1)(YGM092)

SYMBOL	MACH	PARAMETRIC VALUES				REFERENCE INFORMATION		
○	.301	BETA	.000	STAB	1.000	SREF	2690.0000	SQ.FT.
□	.500	RUD-U	.000	RUD-L	.000	LREF	474.8100	IN.
◇	.601	ELV-1B	.000	ELV-0B	3.000	BREF	936.6800	IN.
△	.699	S1-2	.000	S3-4	45.000	XMRP	1109.0000	IN. X0
		S5-6	20.000	10RB	7.850	YMRP	.0000	IN. Y0
						ZMRP	375.0000	IN. Z0
						SCALE	.0300	

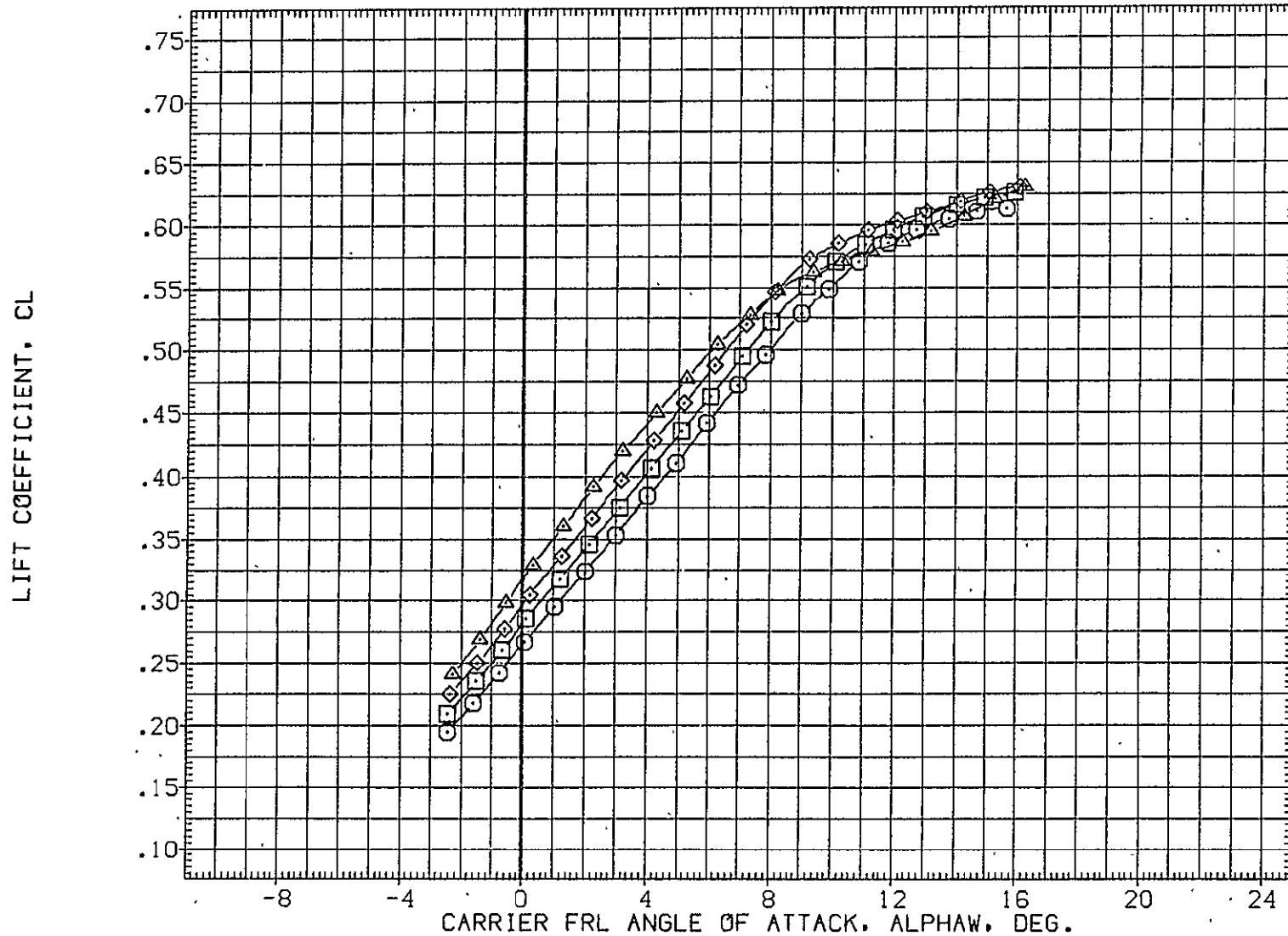


FIG. 58 747+ORB(8 DEG)+TIP FINS+STD SPD BRK, FLAPS UP LAUNCH (S=+1)

ORB

SYMBOL	MACH	PARAMETRIC VALUES			
○	.301	BETA	.000	STAB	1.000
□	.500	RUD-U	.000	RUD-L	-.000
◇	.601	ELV-1B	.000	ELV-OB	3.000
△	.699	S1-2	.000	S3-4	45.000
		S5-6	20.000	10RB	7.850

REFERENCE INFORMATION		
SREF	2690.0000	50.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN. X0
YMRP	.0000	IN. Y0
ZMRP	375.0000	IN. Z0
SCALE	.0300	

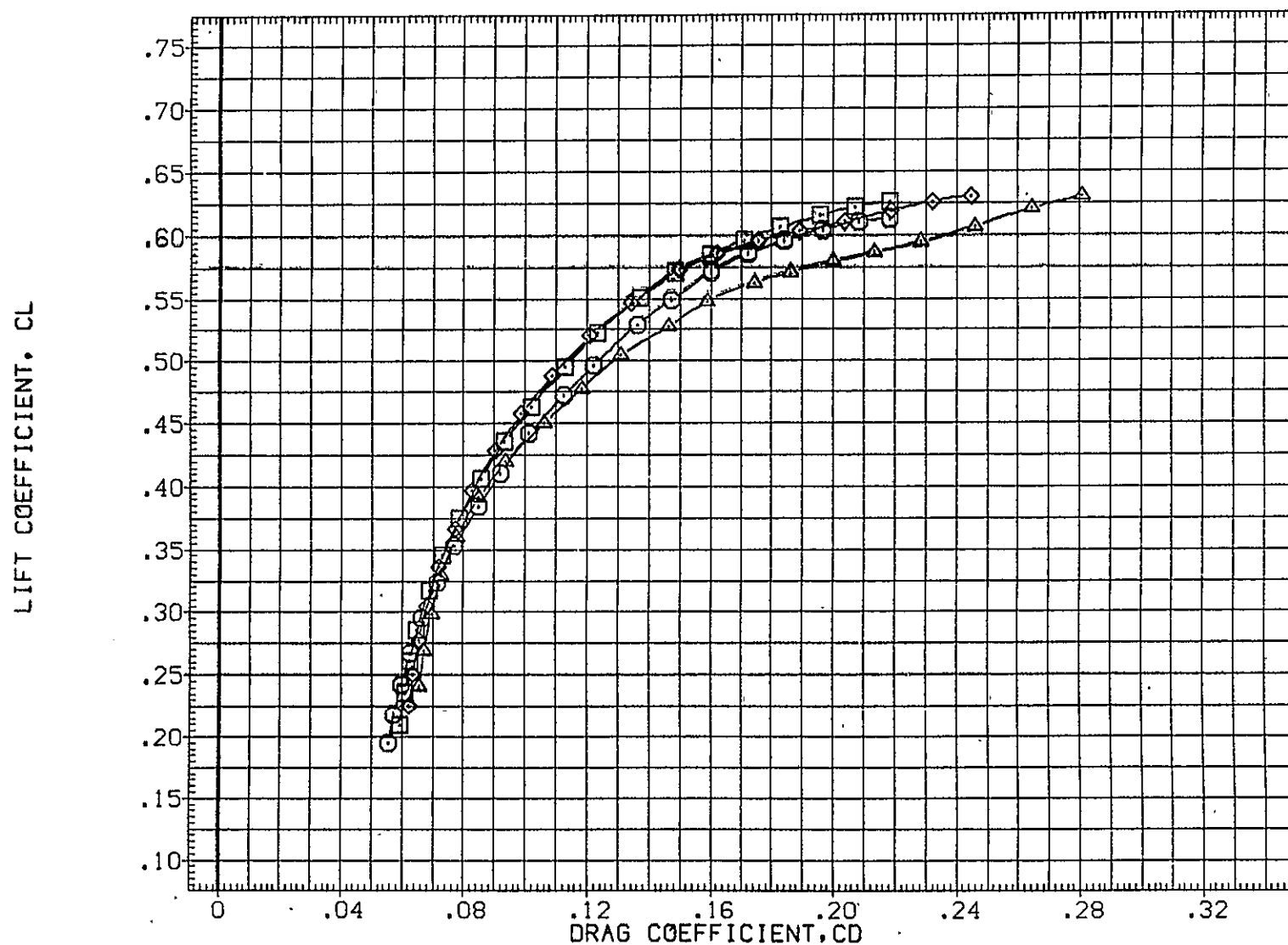


FIG. 58.747+ORB(8 DEG)+TIP FINS+STD SPD BRK,FLAPS UP LAUNCH (S=+1)

ORB

CAS 0RB NOZ AT38.2 (PRES. K1 FO H15.6 V9.1)(YGM092)

SYMBOL	MACH	PARAMETRIC VALUES			
○	.301	BETA	.000	STAB	1.000
□	.500	RUD-U	.000	RUD-L	.000
◇	.601	ELV-1B	.000	ELV-0B	3.000
△	.699	S1-2	.000	S3-4	45.000
		S5-6	20.000	10RB	7.850

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XM RP	1109.0000	IN. X0
YM RP	.0000	IN. Y0
ZM RP	375.0000	IN. Z0
SCALE	.0300	

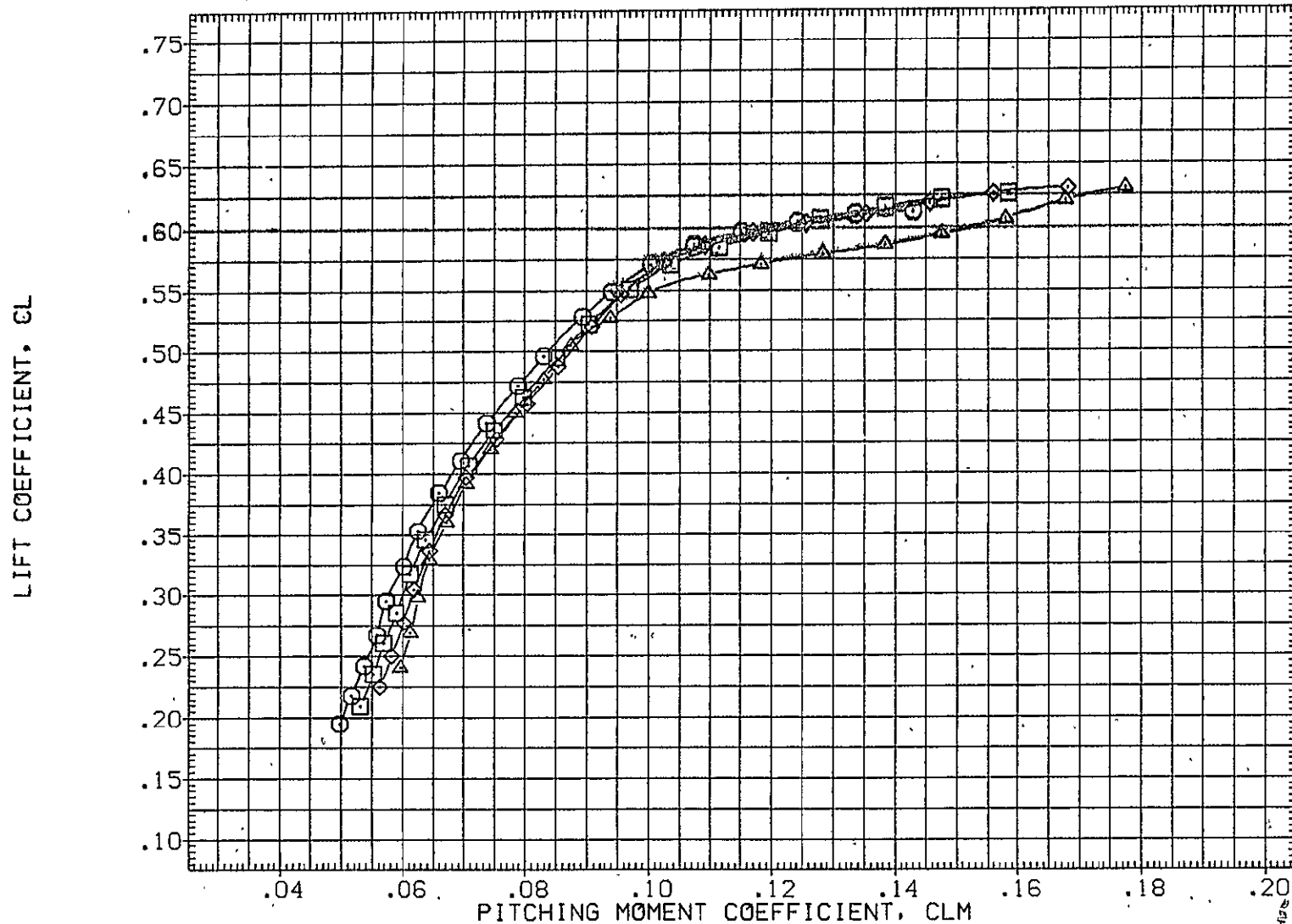


FIG. 58 747+0RB(8 DEG)+TIP FINS+STD SPD BRK, FLAPS UP LAUNCH (S=+1)

0RB

SYMBOL	MACH	PARAMETRIC VALUES				REFERENCE INFORMATION		
○	.301	BETA	.000	STAB	1.000	SREF	2690.0000	SQ.FT.
□	.500	RUD-U	.000	RUD-L	.000	LREF	474.8100	IN.
◇	.601	ELV-1B	.000	ELV-0B	3.000	BREF	936.6800	IN.
△	.699	S1-2	.000	S3-4	45.000	XMRP	1109.0000	IN. X0
		S5-6	20.000	I0RB	7.850	YMRP	.0000	IN. Y0
						ZMRP	375.0000	IN. Z0
						SCALE	.0300	

CARRIER FRL ANGLE OF ATTACK, ALPHA, DEG.

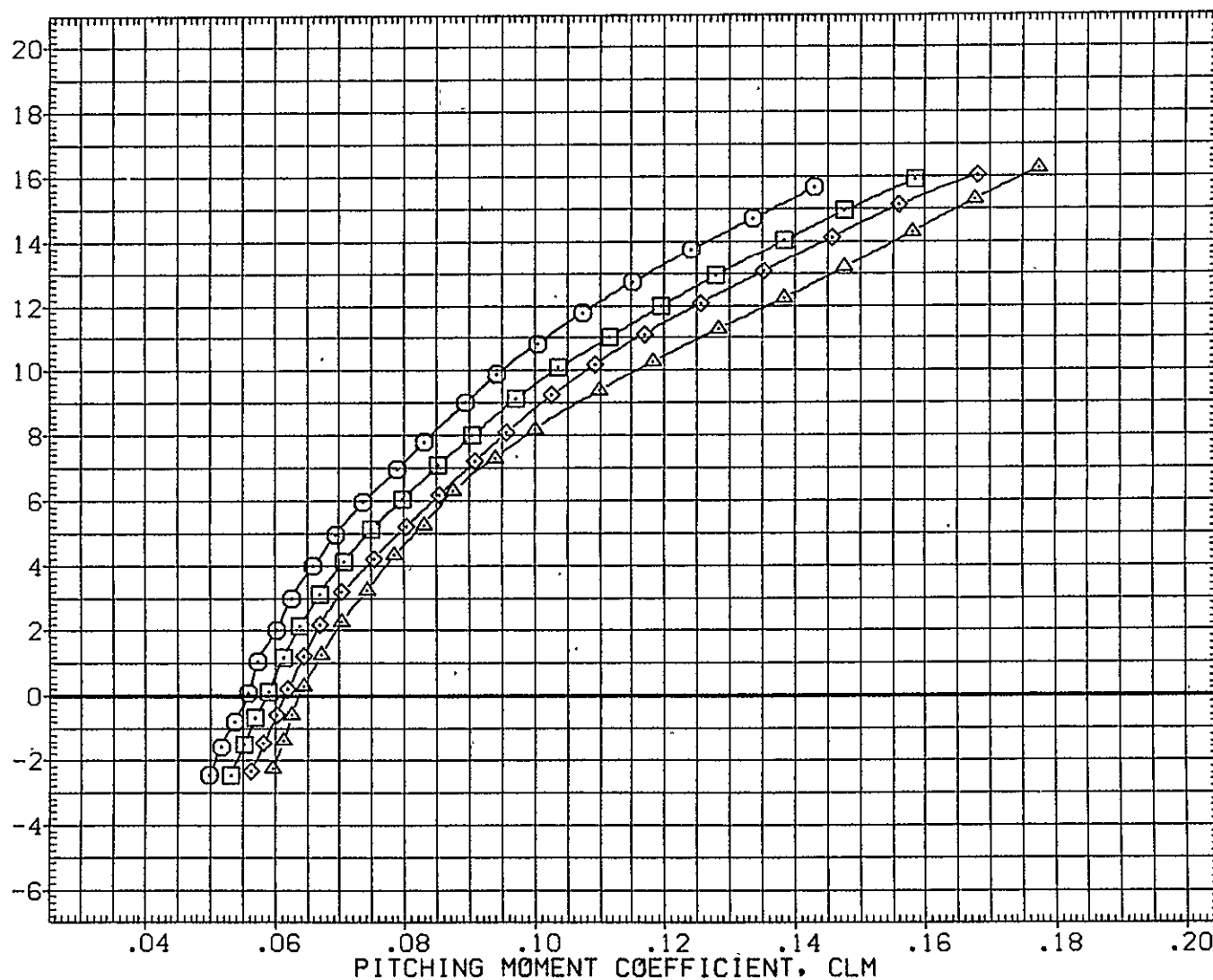


FIG. 58 747+ORB(8 DEG)+TIP FINS+STD SPD BRK, FLAPS UP LAUNCH (S=+1)

ORB

CA5 K1 FO H15.6 V9.1 (PLUS. 0RB N0Z AT38.2)(RGM095)

SYMBOL
○
□
◇
△

MACH
.300
.500
.600
.700

BETA
RUD-U
ELV-1B
SI-2
SS-6

PARAMETRIC VALUES
.000
.000
10.000
.000
20.000

STAB
RUD-L
ELV-0B
S3-4
ICRB

1.000
.000
13.000
45.000
7.850

REFERENCE INFORMATION

SREF 5500.0000 SQ.FT.
LREF 327.8000 IN.
BREF 2348.0000 IN.
XMRP 1339.9100 IN. XC
YMRP .0000 IN. YC
ZMRP 190.7500 IN. ZC
SCALE .0300

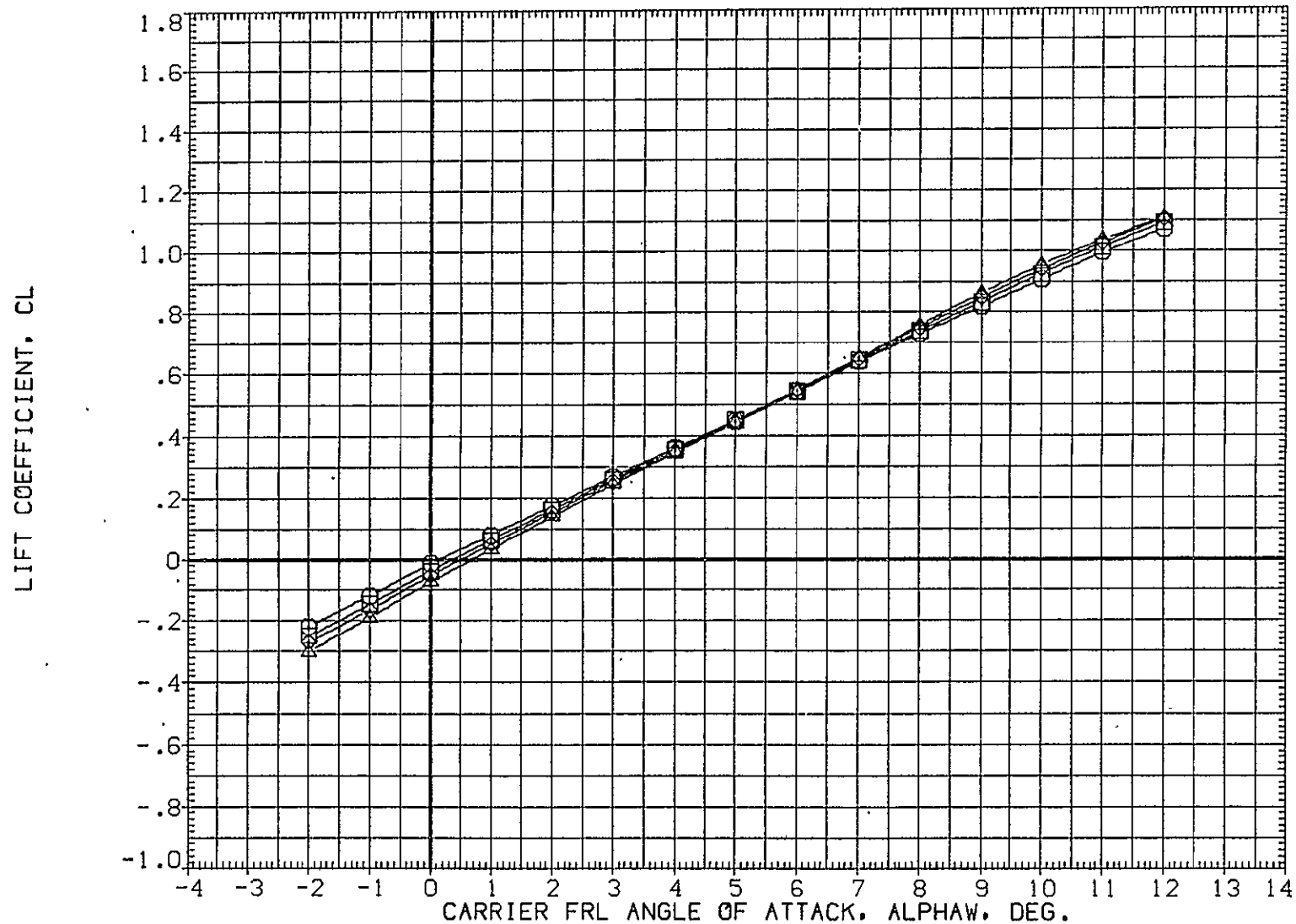


FIG. 59 747+0RB(8 DEG)+TIP FINS+STD SPD BRK, FLAPS UP, TAIL CONE OFF, DE=10 TOTAL

CA5 K1 F0 H15.6 V9.1 (PLUS. 0RB N0Z AT38.2)(RGM095)

SYMBOL	MACH	PARAMETRIC VALUES				REFERENCE INFORMATION		
○	.300	BETA	.000	STAB	1.000	SREF	5500.0000	SQ.FT.
□	.500	RUD-U	.000	RUD-L	.000	LREF	327.8000	IN.
◇	.600	ELV-18	10.000	ELV-08	13.000	BREF	2348.0000	IN.
△	.700	S1-2	.000	S3-4	45.000	XMRP	1339.9100	IN. XC
		S5-6	20.000	10RB	7.850	YMRP	.0000	IN. YC
						ZMRP	190.7500	IN. ZC
						SCALE	.0300	

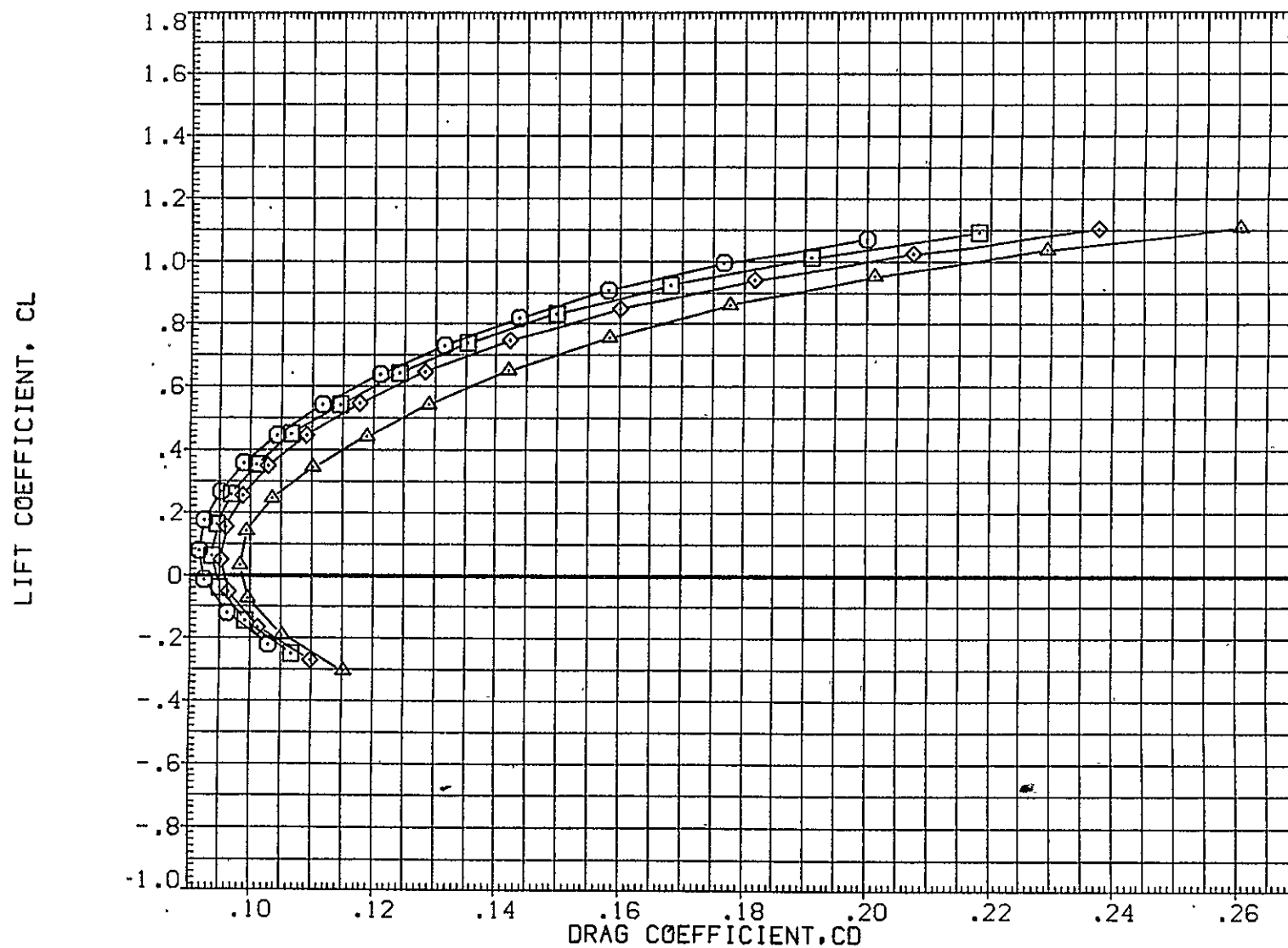


FIG. 59 747+0RB(8 DEG)+TIP FINS+STD SPD BRK,FLAPS UP,TAIL CONE OFF,DE=10 TOTAL

CA5 K1 F0 H15.6 V9.1 (PLUS. ORB NOZ AT38.2)(RGM095)

SYMBOL	MACH	PARAMETRIC VALUES				REFERENCE INFORMATION		
○	.300	BETA	.000	STAB	1.000	SREF	5500	0000 SQ.FT.
□	.500	RUD-U	.000	RUD-L	.000	LREF	327.8000	IN.
◇	.600	ELV-1B	10.000	ELV-OB	13.000	BREF	2348.0000	IN.
△	.700	S1-2	.000	S3-4	45.000	XMRP	1339.9100	IN. XC
		S5-6	20.000	IORB	7.850	YMRP	.0000	IN. YC
						ZMRP	190.7500	IN. ZC
						SCALE	.0300	

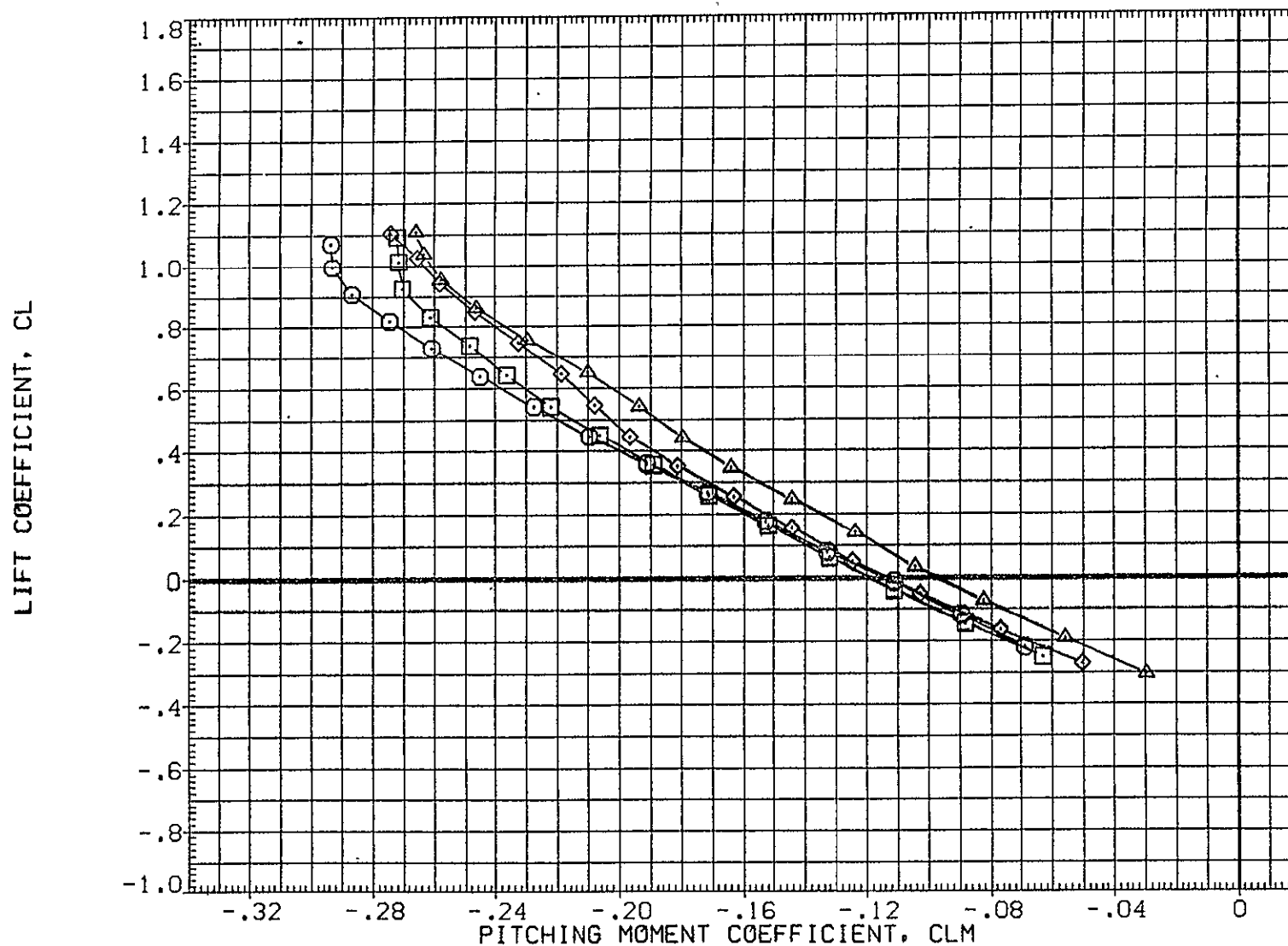


FIG. 59 747+ORB(8 DEG)+TIP FINS+STD SPD BRK,FLAPS UP,TAIL CONE OFF;DE=10 TOTAL

SYMBOL	MACH	PARAMETRIC VALUES				REFERENCE INFORMATION		
○	.300	BETA	.000	STAB	1.000	SREF	5500.0000	50.FT.
□	.500	RUD-U	.000	RUD-L	.000	LREF	327.8000	IN.
◇	.600	ELV-1B	10.000	ELV-0B	13.000	BREF	2348.0000	IN.
△	.700	SI-2	.000	S3-4	45.000	XMRP	1339.9100	IN. XC
		S5-6	20.000	I0RB	7.850	YMRP	.0000	IN. YC
						ZMRP	190.7500	IN. ZC
						SCALE	.0300	

CARRIER FRL ANGLE OF ATTACK, ALPHA, DEG.

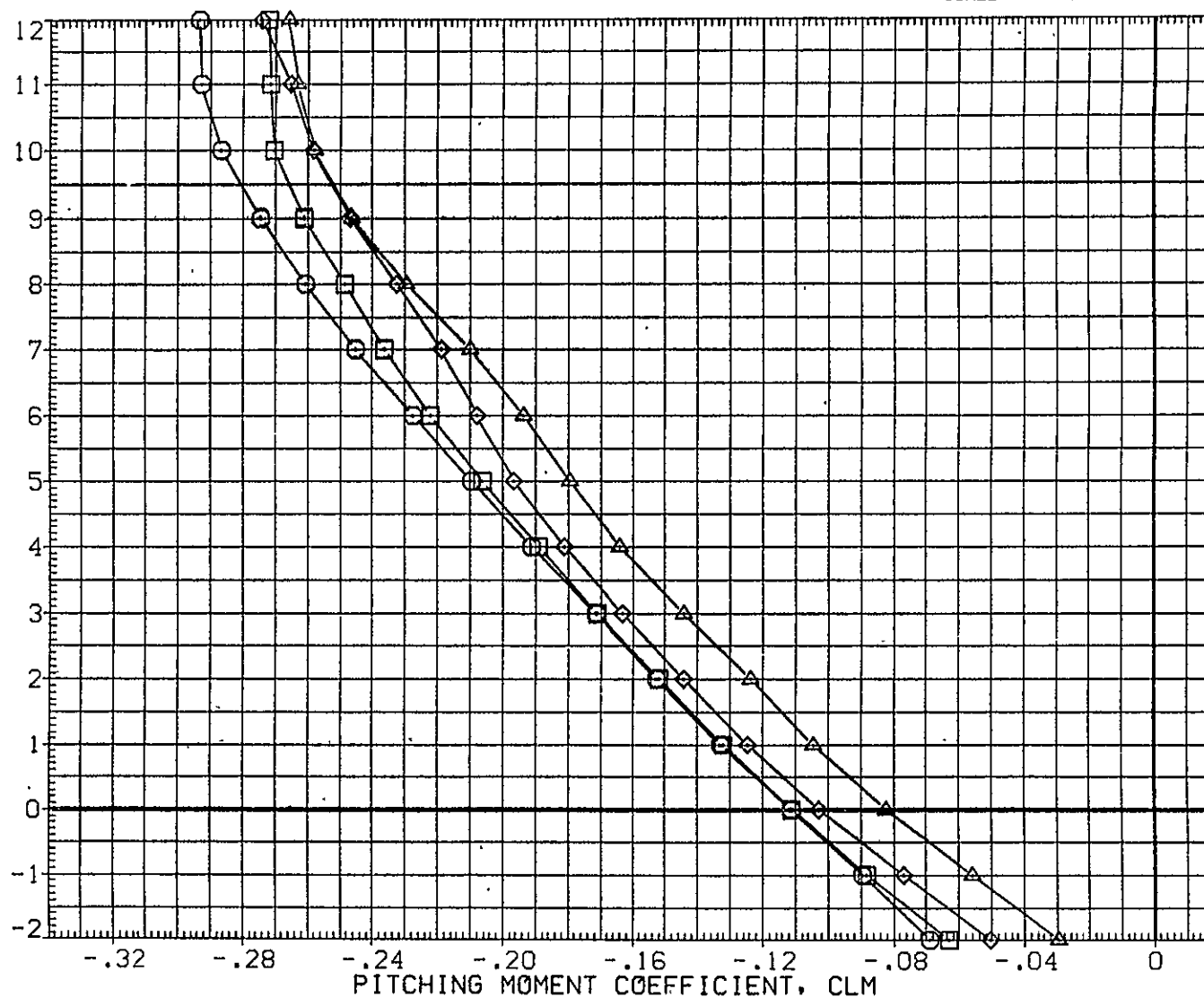


FIG. 59 747+0RB(8 DEG)+TIP FINS+STD SPD BRK, FLAPS UP, TAIL CONE OFF, DE=10 TOTAL

CA5 K1 F0 H15.6 V9.1 MINUS 0RB N0Z AT38.2 (BGM095)

SYMBOL	MACH	PARAMETRIC VALUES				REFERENCE INFORMATION		
○	.300	BETA	.000	STAB	1.000	SREF	5500.0000	50.FT.
□	.500	RUD-U	.000	RUD-L	.000	LREF	327.8000	IN.
◇	.600	ELV-IB	10.000	ELV-OB	13.000	BREF	2348.0000	IN.
△	.700	S1-2	.000	S3-4	45.000	XMRP	1339.9100	IN. XC
		S5-6	20.000	IORB	7.850	YMRP	.0000	IN. YC
						ZMRP	190.7500	IN. ZC
						SCALE	.0300	

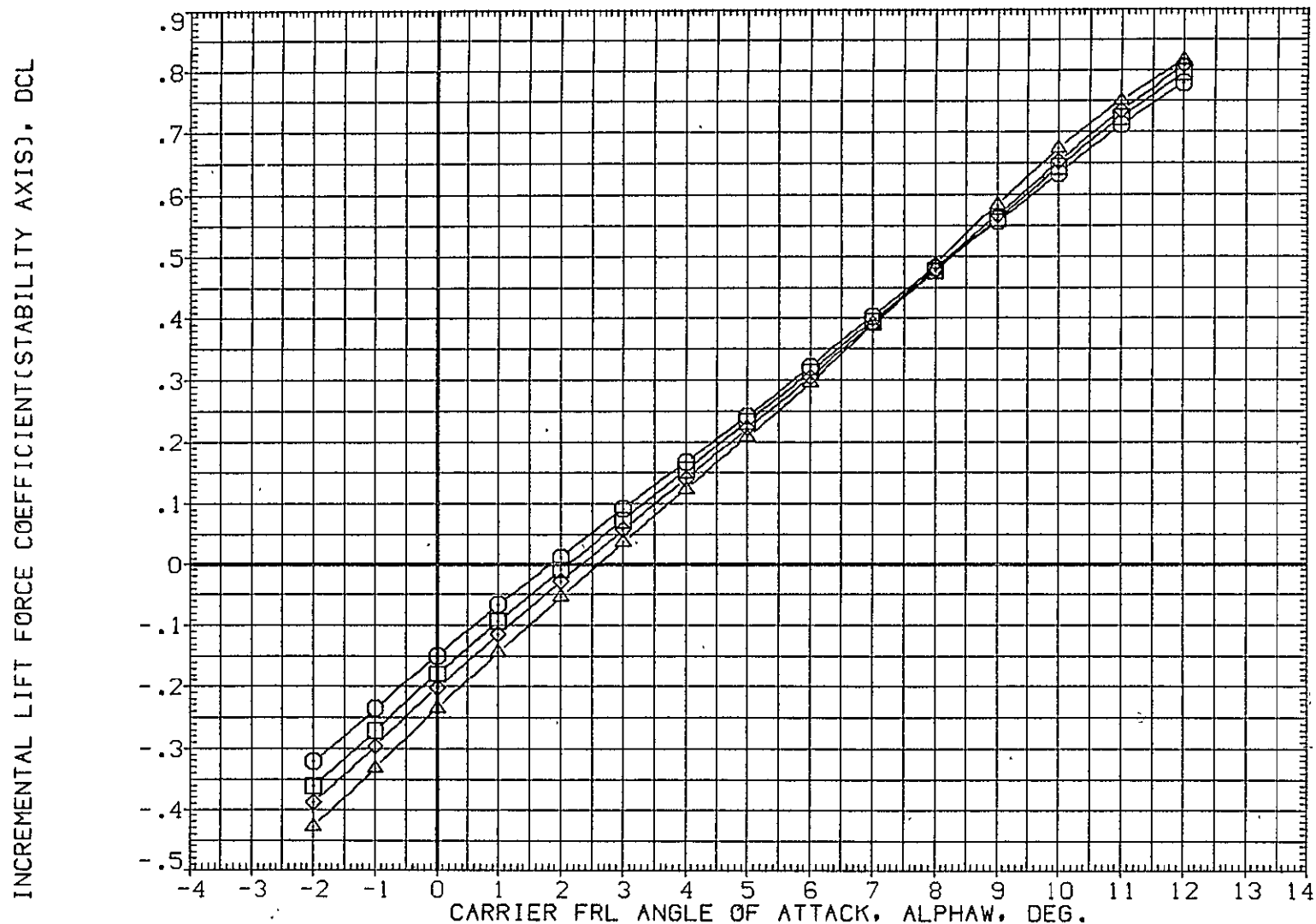


FIG. 60 747+0RB(8 DEG)+TIP FINS+STD SPD BRK, FLAPS UP, TAIL CONE OFF, DE=10 747

SYMBOL	MACH	PARAMETRIC VALUES			
○	.300	BETA	.000	STAB	1.000
□	.500	RUD-U	.000	RUD-L	.000
◇	.600	ELV-1B	10.000	ELV-0B	13.000
△	.700	S1-2	.000	S3-4	45.000
		S5-6	20.000	10RB	7.850

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

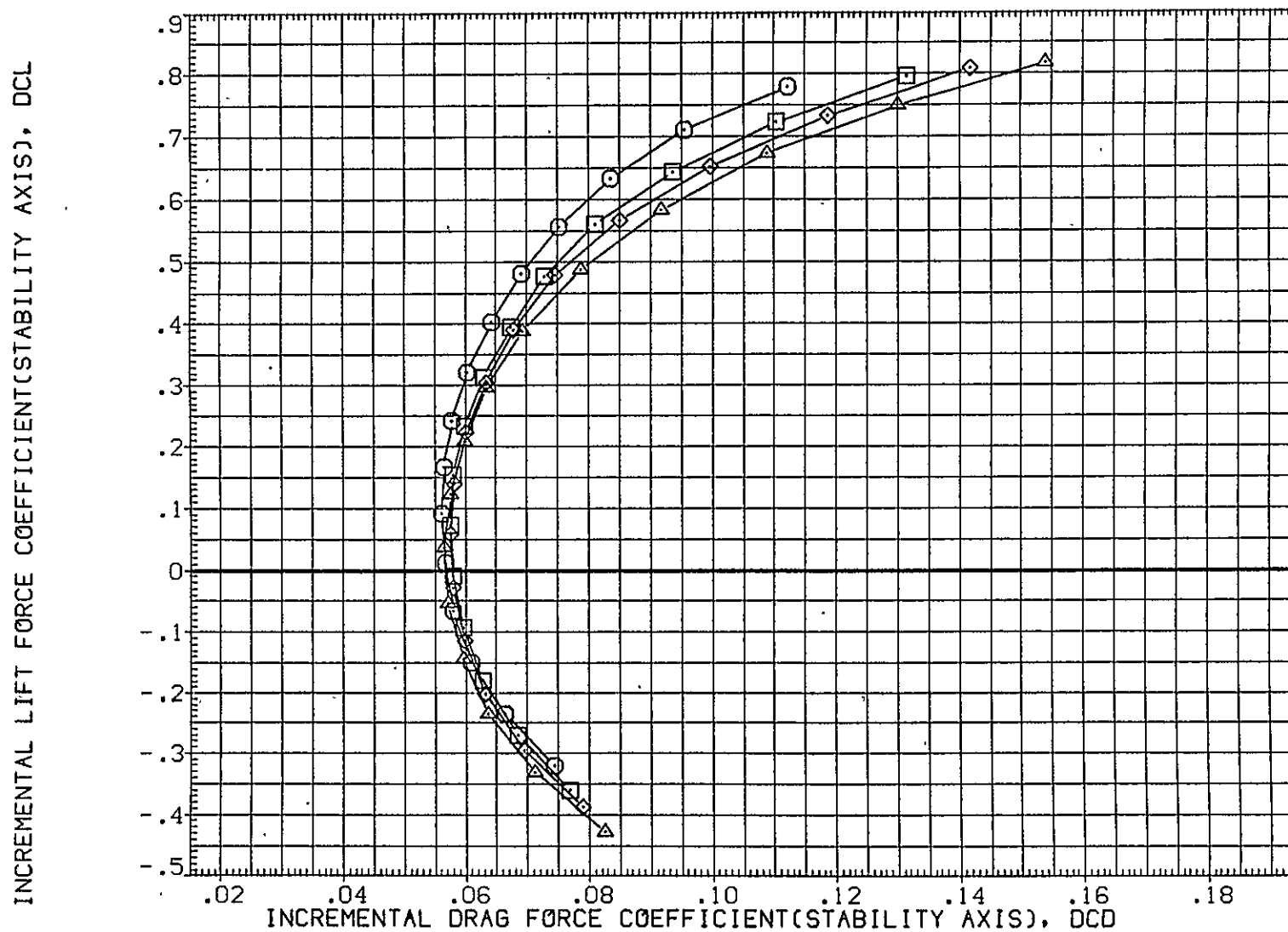


FIG. 60 747+ORB(8 DEG)+TIP FINS+STD SPD BRK,FLAPS UP,TAIL CONE OFF,DE=10 747

CA5 K1 FO H15.6 V9.1 MINUS 0RB N0Z AT38.2 (BGM095)

SYMBOL	MACH	PARAMETRIC VALUES				REFERENCE INFORMATION		
○	.300	BETA	.000	STAB	1.000	SREF	5500.0000	SQ.FT.
□	.500	RUD-U	.000	RUD-L	.000	LREF	327.8000	IN.
◇	.600	ELV-1B	10.000	ELV-0B	13.000	BREF	2348.0000	IN.
△	.700	S1-2	.000	S3-4	45.000	XMRP	1339.9100	IN. XC
		S5-6	20.000	10RB	7.850	YMRP	.0000	IN. YC
						ZMRP	190.7500	IN. ZC
						SCALE	.0300	

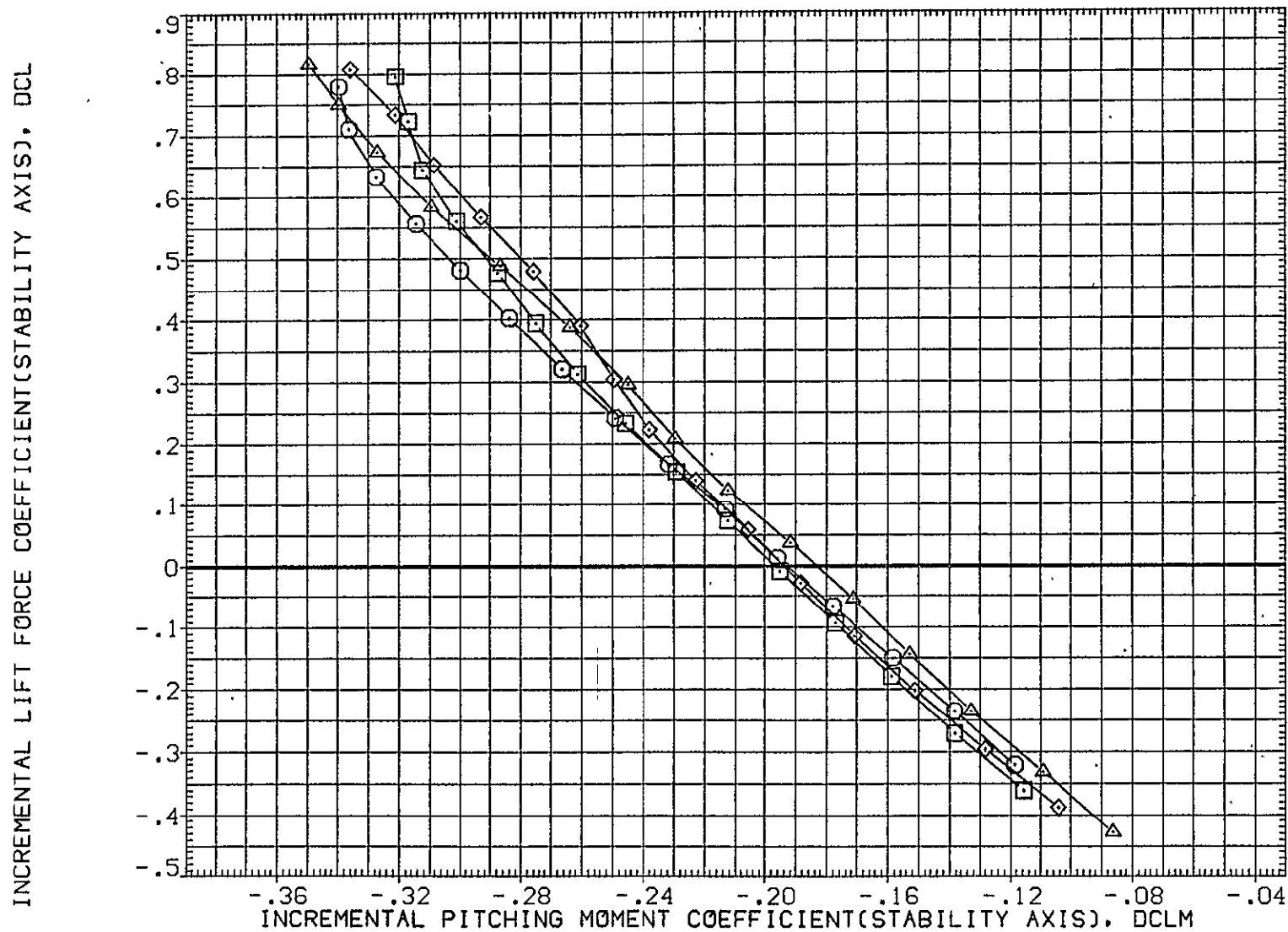


FIG. 60 747+0RB(8 DEG)+TIP FINS+STD SPD BRK, FLAPS UP, TAIL CONE. OFF, DE=10 747

CA5 K1 FO H15.6 V9.1 MINUS ORB N0Z AT38.2 (BGM095)

SYMBOL
○
□
◇
△

MACH

.300
.500
.600
.700

PARAMETRIC VALUES

BETA .000 STAB 1.000
RUD-U .000 RUD-L .000
ELV-IB 10.000 ELV-OB 13.000
S1-2 .000 S3-4 45.000
S5-6 20.000 IORB 7.850

REFERENCE INFORMATION

SREF 5500.0000 SQ.FT.
LREF 327.8000 IN.
BREF 2348.0000 IN.
XMRP 1339.9100 IN. XC
YMRP .0000 IN. YC
ZMRP 190.7500 IN. ZC
SCALE .0300

CARRIER FRL ANGLE OF ATTACK, ALPHA, DEG.

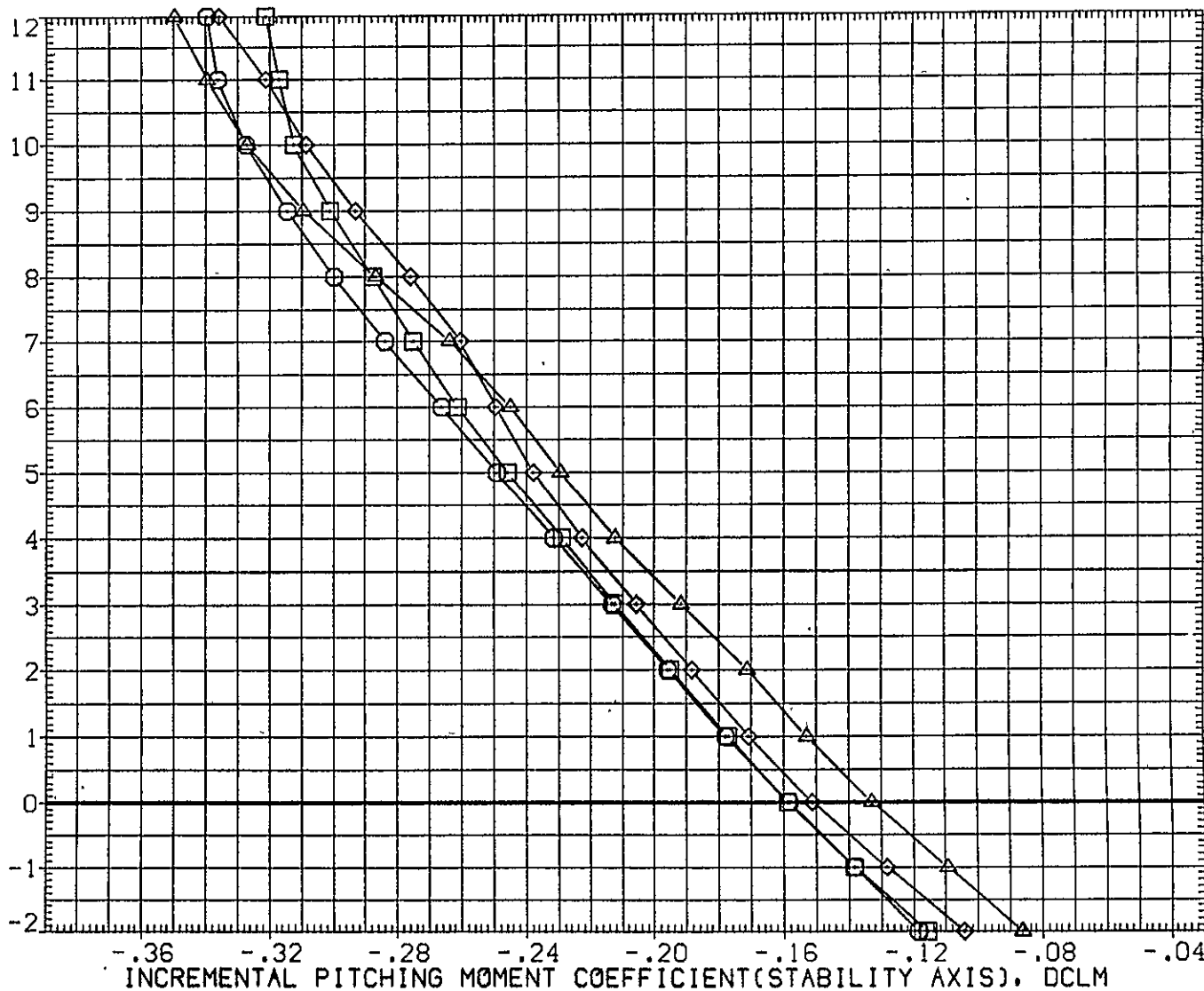


FIG. 60 747+ORB(8 DEG)+TIP FINS+STD SPD BRK, FLAPS UP, TAIL CONE OFF, DE=10

747

CA5 ORB NOZ AT38.2 (PRES. K1 FO H15.6 V9.1)(YGM095)

SYMBOL
○
□
◇
△

MACH	PARAMETRIC VALUES			
.301	BETA	.000	STAB	1.000
.499	RUD-U	.000	RUD-L	.000
.600	ELV-1B	10.000	ELV-0B	13.000
.701	S1-2	.000	S3-4	45.000
	S5-6	20.000	10RB	7.850

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN. X0
YMRP	.0000	IN. Y0
ZMRP	375.0000	IN. Z0
SCALE	.0300	

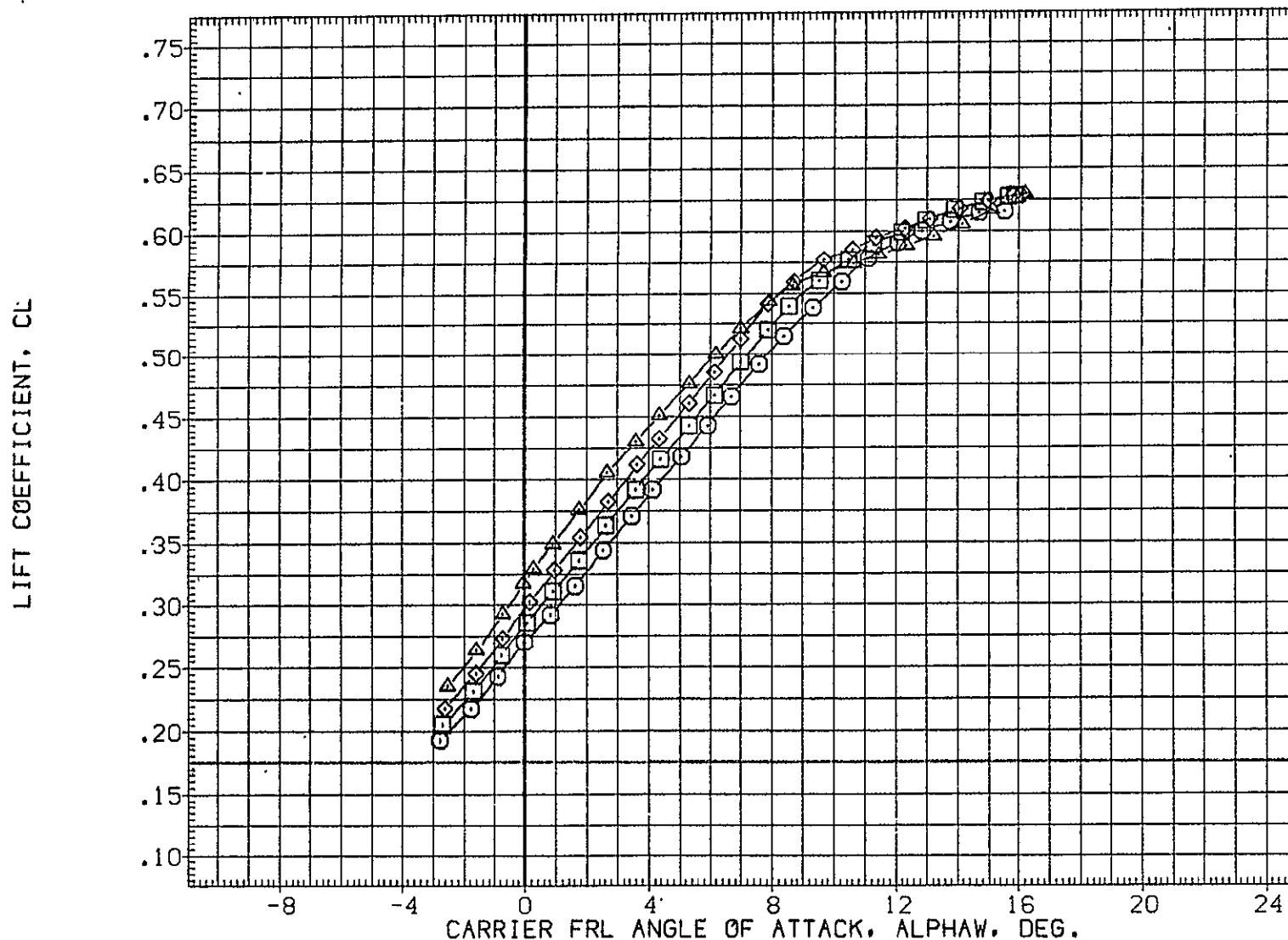


FIG. 61 747+ORB(8 DEG)+TIP FINS+STD SPD BRK, FLAPS UP, TAIL CONE OFF, DE=10 ORB

SYMBOL

MACH

PARAMETRIC VALUES

REFERENCE INFORMATION

○
□
◇
△.301
.499
.600
.701BETA
RUD-U
ELV-1B
SI-2
SS-6.000
.000
10.000
.000
20.000STAB
RUD-L
ELV-0B
S3-4
IORB1.000
.000
13.000
45.000
7.850

SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN. X0
YMRP	.0000	IN. Y0
ZMRP	375.0000	IN. Z0
SCALE	.0300	

LIFT COEFFICIENT, CL

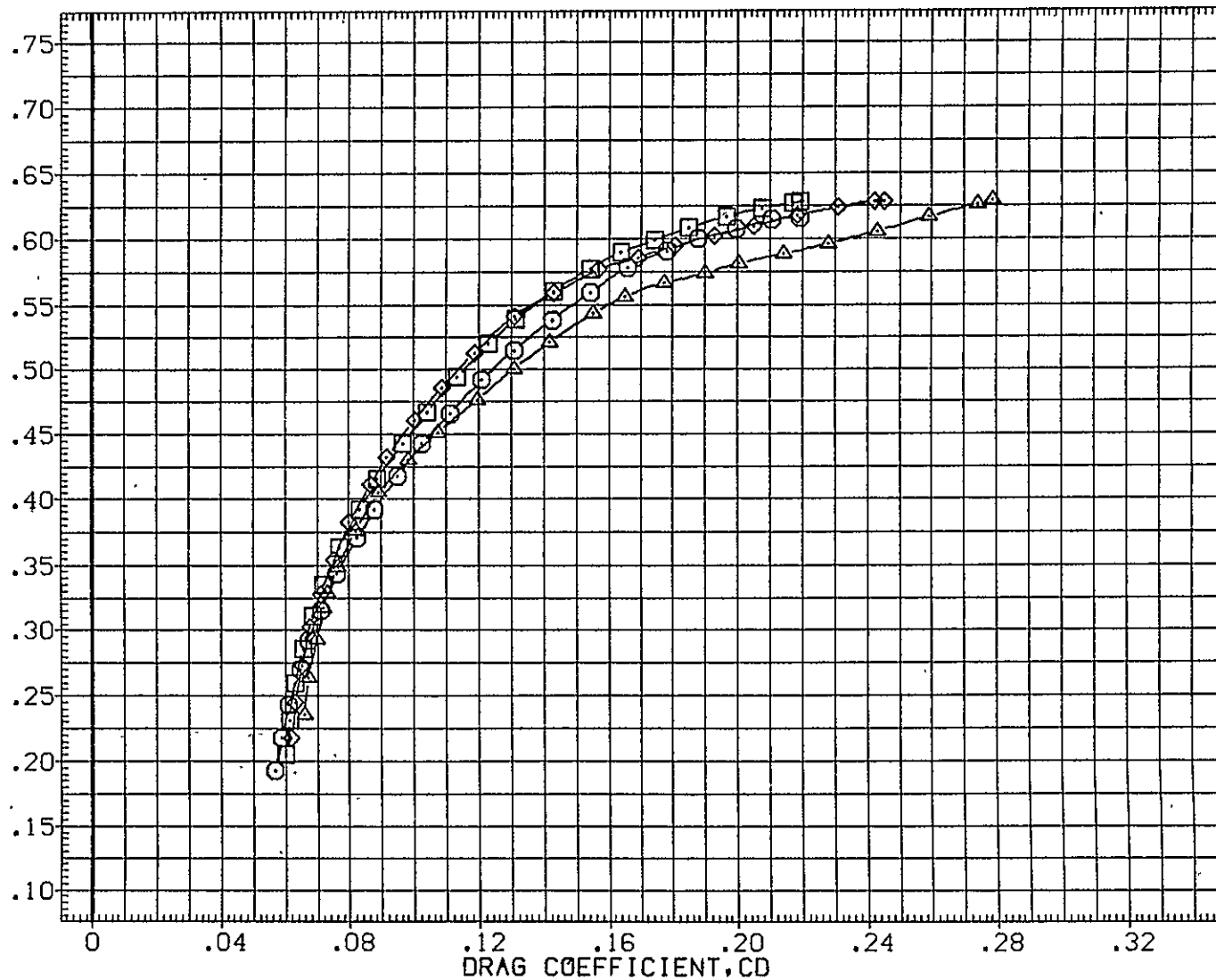


FIG. 61 747+ORB(8 DEG)+TIP FINS+STD SPD BRK, FLAPS UP, TAIL CONE OFF, DE=10 ORB

CA5 0RB N0Z AT38.2 (PRES. K1 FO H15.6 V9.1)(YGM095)

SYMBOL	MACH	PARAMETRIC VALUES				REFERENCE INFORMATION		
○	.301	BETA	.000	STAB	1.000	SREF	2690.0000	SQ.FT.
□	.499	RUD-U	.000	RUD-L	.000	LREF	474.8100	IN.
◇	.600	ELV-IB	10.000	ELV-OB	13.000	BREF	936.6800	IN.
△	.701	S1-2	.000	S3-4	45.000	XMRP	1109.0000	IN. X0
		S5-6	20.000	10RB	7.850	YMRP	.0000	IN. Y0
						ZMRP	375.0000	IN. Z0
						SCALE	.0300	

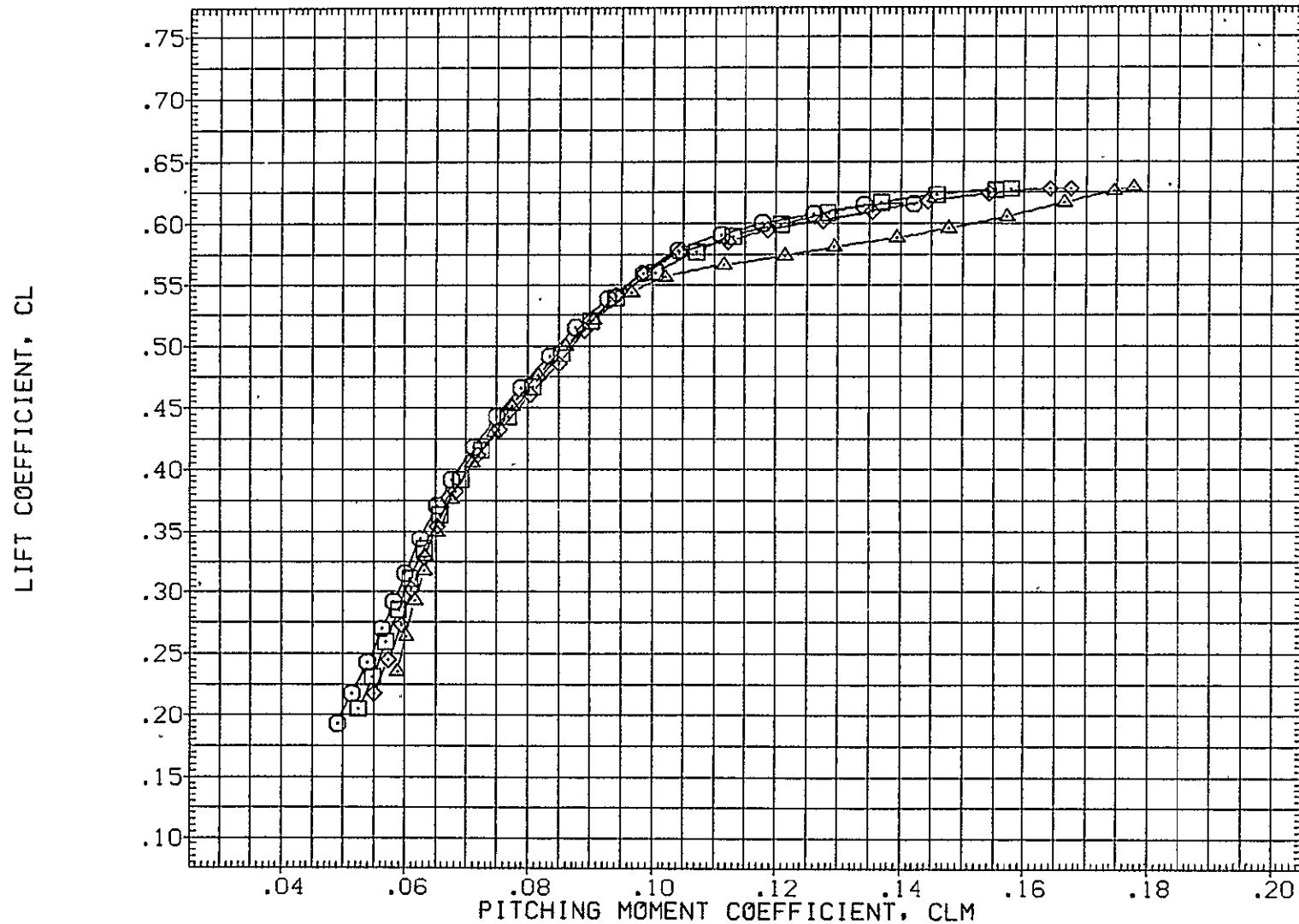


FIG. 61 747+0RB(8 DEG)+TIP FINS+STD SPD BRK, FLAPS UP, TAIL CONE OFF, DE=10 0RB

SYMBOL	MACH	PARAMETRIC VALUES			
○	.301	BETA	.000	STAB	1.000
□	.499	RUD-U	.000	RUD-L	.000
◇	.600	ELV-1B	10.000	ELV-0B	13.000
△	.701	S1-2	.000	S3-4	45.000
.		S5-6	20.000	10RB	7.850

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN. X0
YMRP	.0000	IN. Y0
ZMRP	375.0000	IN. Z0
SCALE	.0300	

CARRIER FRL ANGLE OF ATTACK, ALPHA, DEG.

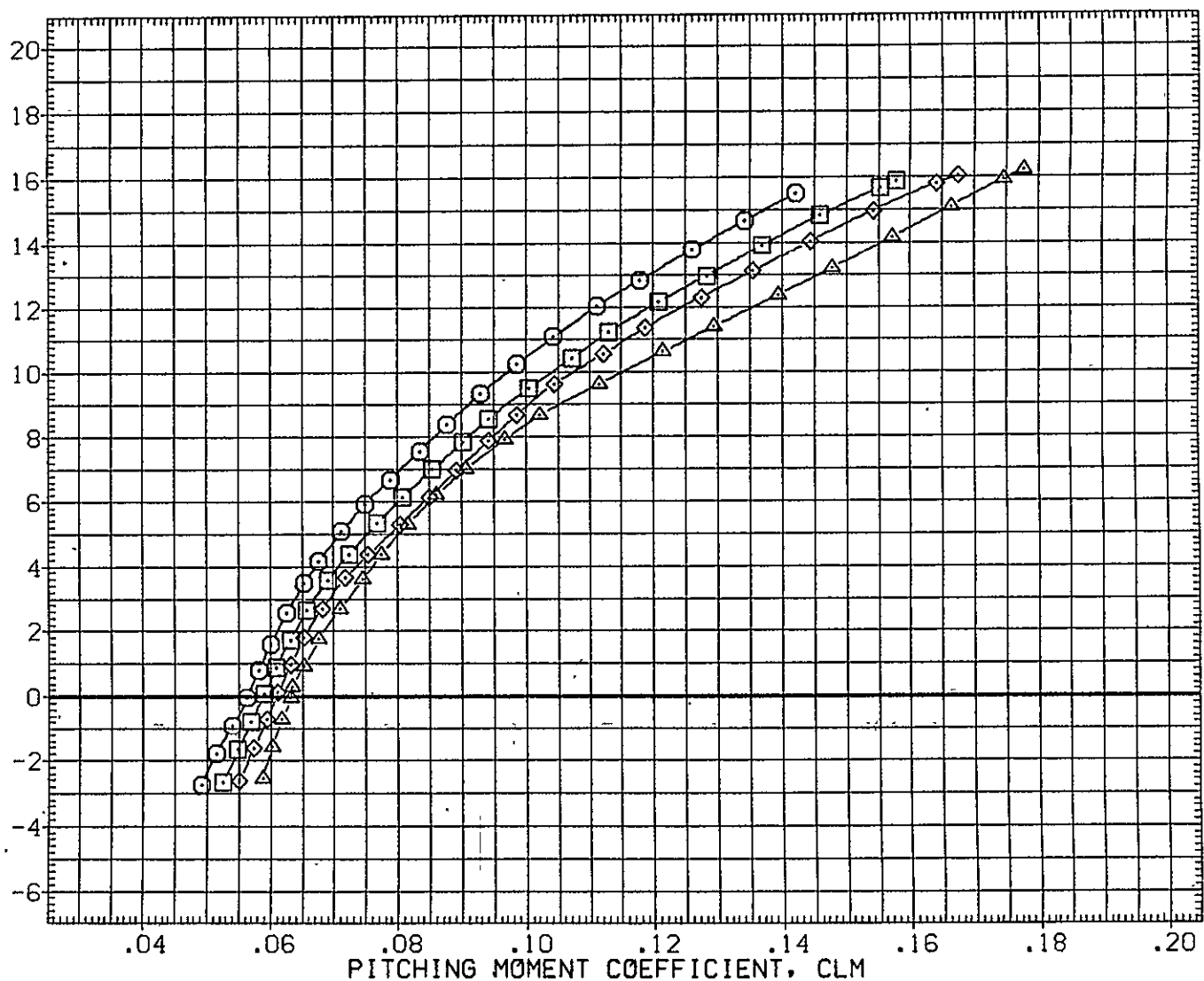


FIG. 61 747+0RB(8 DEG)+TIP FINS+STD SPD BRK, FLAPS UP, TAIL CONE OFF, DE=10 0RB

CA5 K1 FO H15.6 V9.1 (PLUS. 0RB TC5 AT38.2)(RGM096)

SYMBOL	MACH	PARAMETRIC VALUES				REFERENCE INFORMATION		
○	.300	BETA	.000	STAB	1.000	SREF	5500.0000	SQ.FT.
□	.500	RUD-U	.000	RUD-L	.000	LREF	327.8000	IN.
◇	.600	ELV-IB	.000	ELV-OB	.000	BREF	2348.0000	IN.
△	.700	S1-2	.000	S3-4	45.000	XMRP	1339.9100	IN. XC
		S5-6	20.000	10RB	9.700	YMRP	.0000	IN. YC
						ZMRP	190.7500	IN. ZC
						SCALE	.0300	

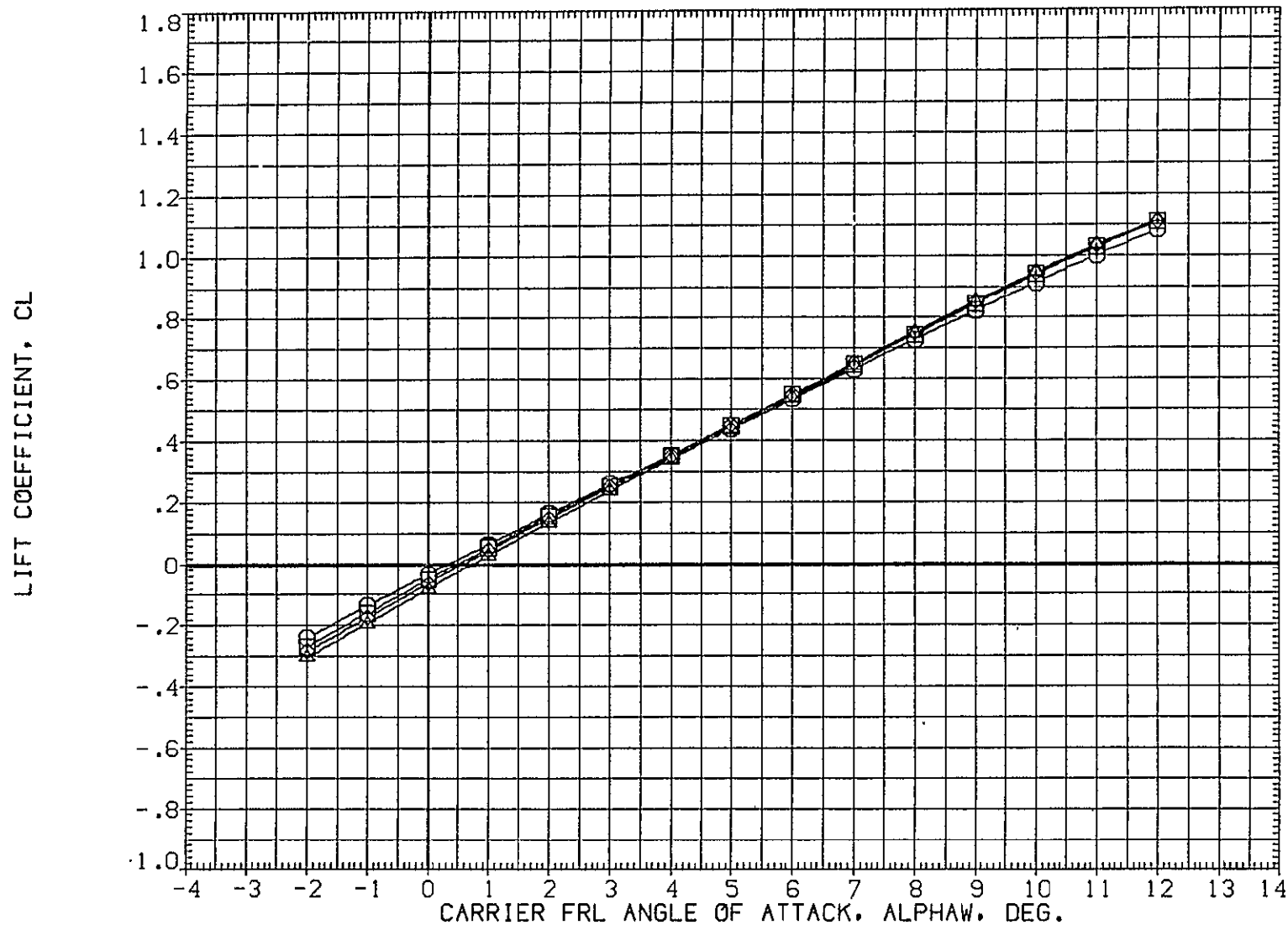


FIG. 62 747+0RB(10 DEG)+TIP FINS+STD SPD BRK, FLAPS UP LAUNCH(S=+1)

SYMBOL	MACH	PARAMETRIC VALUES			
○	.300	BETA	.000	STAB	1.000
□	.500	RUD-U	.000	RUD-L	.000
◇	.600	ELV-1B	.000	ELV-0B	.000
△	.700	S1-2	.000	S3-4	45.000
		S5-6	20.000	10RB	9.700

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

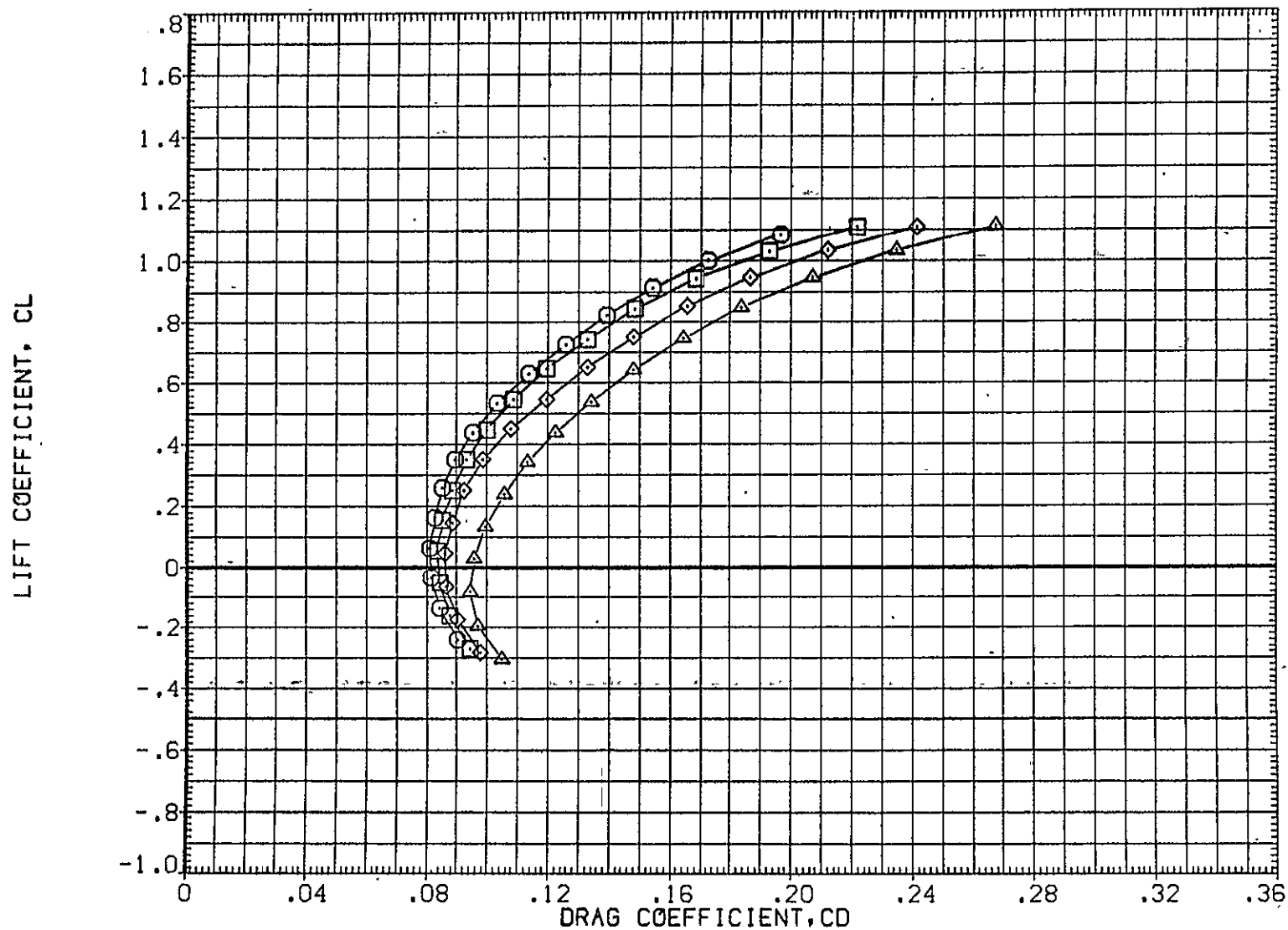


FIG. 62 747+0RB(10 DEG)+TIP FINS+STD SPD BRK, FLAPS UP LAUNCH(S=+1)

TOTAL

CA5 K1 F0 H15.6 V9.1 (PLUS. 0RB TC5 AT38.2)(RGM096)

SYMBOL	MACH	PARAMETRIC VALUES				REFERENCE INFORMATION		
○	.300	BETA	.000	STAB	1.000	SREF	5500.0000	SQ.FT.
□	.500	RUD-U	.000	RUD-L	.000	LREF	327.8000	IN.
◇	.600	ELV-IB	.000	ELV-OB	.000	BREF	2348.0000	IN.
△	.700	S1-2	.000	S3-4	45.000	XMRP	1339.9100	IN. XC
		SS-6	20.000	IORB	9.700	YMRP	.0000	IN. YC
						ZMRP	190.7500	IN. ZC
						SCALE	.0300	

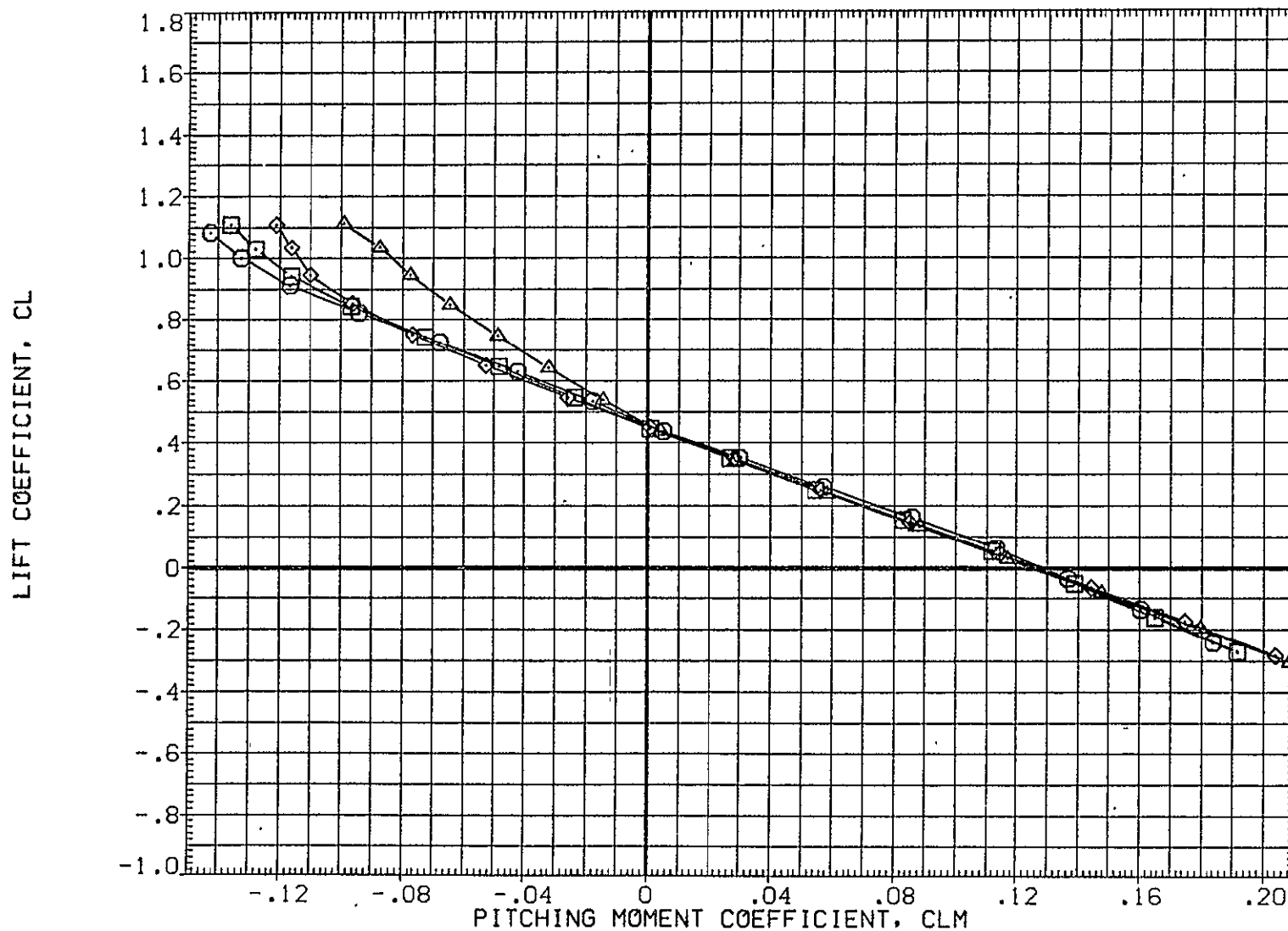


FIG. 62 747+0RB(10 DEG)+TIP FINS+STD SPD BRK,FLAPS UP LAUNCH(S=+1)

TOTAL

CA5 K1 F0 H15.6 V9.1 (PLUS. 0RB TC5 AT38.2)(RGM096)

SYMBOL	MACH	PARAMETRIC VALUES				REFERENCE INFORMATION		
○	.300	BETA	.000	STAB	1.000	SREF	5500.0000	50. FT.
□	.500	RUD-U	.000	RUD-L	.000	LREF	327.8000	IN.
◇	.600	ELV-IB	.000	ELV-OB	.000	BREF	2348.0000	IN.
△	.700	S1-2	.000	S3-4	45.000	XMRP	1339.9100	IN. XC
		S5-6	20.000	IORB	9.700	YMRP	.0000	IN. YC
						ZMRP	190.7500	IN. ZC
						SCALE	.0300	

CARRIER FRL ANGLE OF ATTACK, ALPHA, DEG.

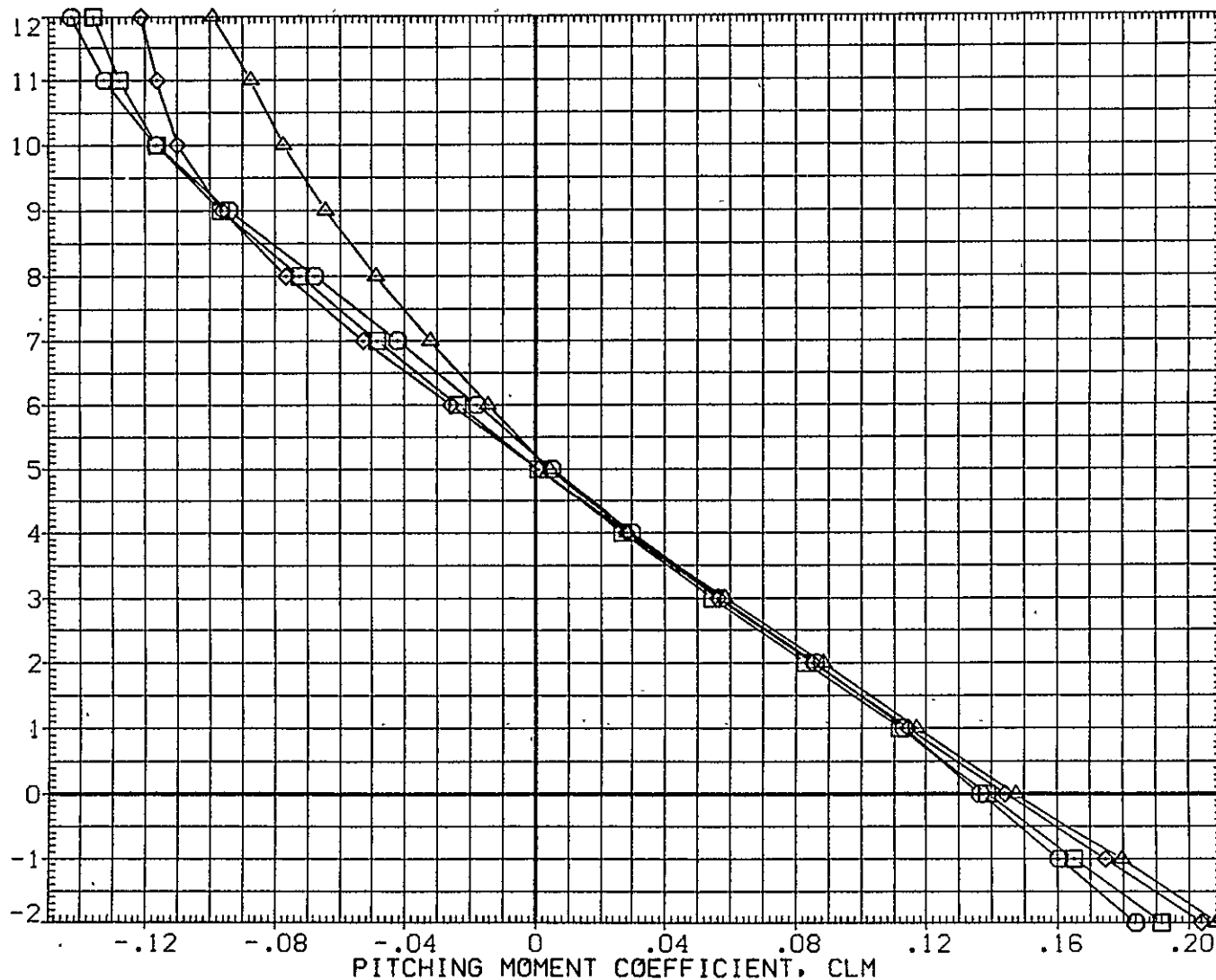


FIG. 62 747+0RB(10 DEG)+TIP FINS+STD SPD BRK, FLAPS UP LAUNCH(S=+1)

TOTAL

CA5 K1 FO H15.6 V9.1 MINUS ORB TC5 AT38.2 (BGM096)

SYMBOL
○
□
◇
△

MACH	BETA	PARAMETRIC VALUES	STAB	1.000
.300	RUD-U	.000	RUD-L	.000
.500	ELV-1B	.000	ELV-0B	.000
.600	S1-2	.000	S3-4	45.000
.700	SS-6	20.000	ICRB	9.700

REFERENCE INFORMATION		
SREF	5500 0000	SQ.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

INCREMENTAL LIFT FORCE COEFFICIENT(STABILITY AXIS), DCL

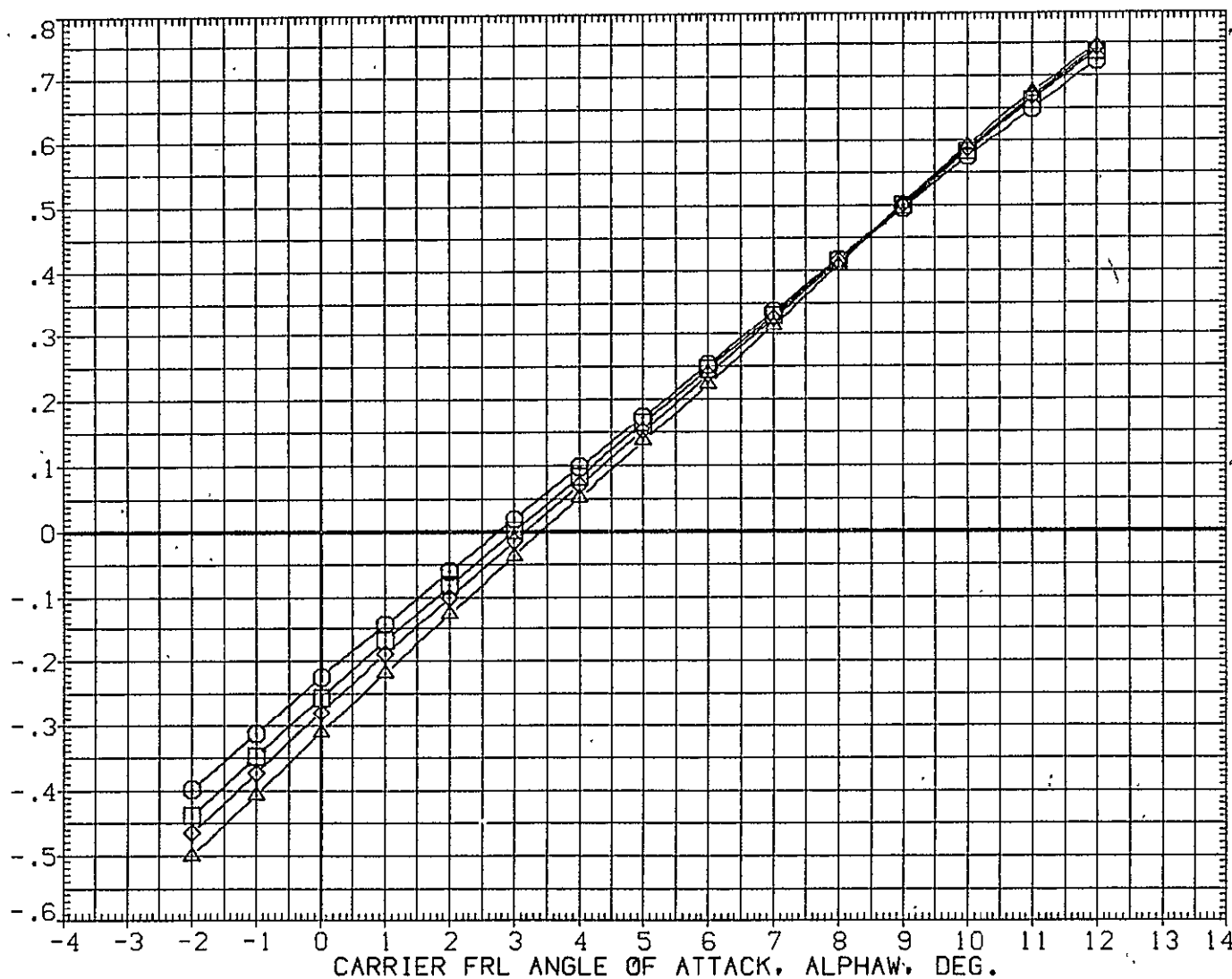


FIG. 63 747+ORB(10 DEG)+TIP FINS+STD SPD BRK, FLAPS UP LAUNCH(S=+1)

747

CA5 K1 F0 H15.6 V9.1 MINUS ORB TC5 AT38.2 (BGM096)

SYMBOL
○
□
◇
△

MACH
.300
.500
.600
.700

PARAMETRIC VALUES
BETA .000 STAB 1.000
RUD-U .000 RUD-L .000
ELV-1B .000 ELV-OB .000
SI-2 .000 S3-4 45.000
S5-6 20.000 ICRB 9.700

REFERENCE INFORMATION

SREF 5500.0000 SQ.FT.
LREF 327.8000 IN.
BREF 2348.0000 IN.
XMRP 1339.9100 IN. XC
YMRP .0000 IN. YC
ZMRP 190.7500 IN. ZC
SCALE .0300

INCREMENTAL LIFT FORCE COEFFICIENT(STABILITY AXIS), DCL

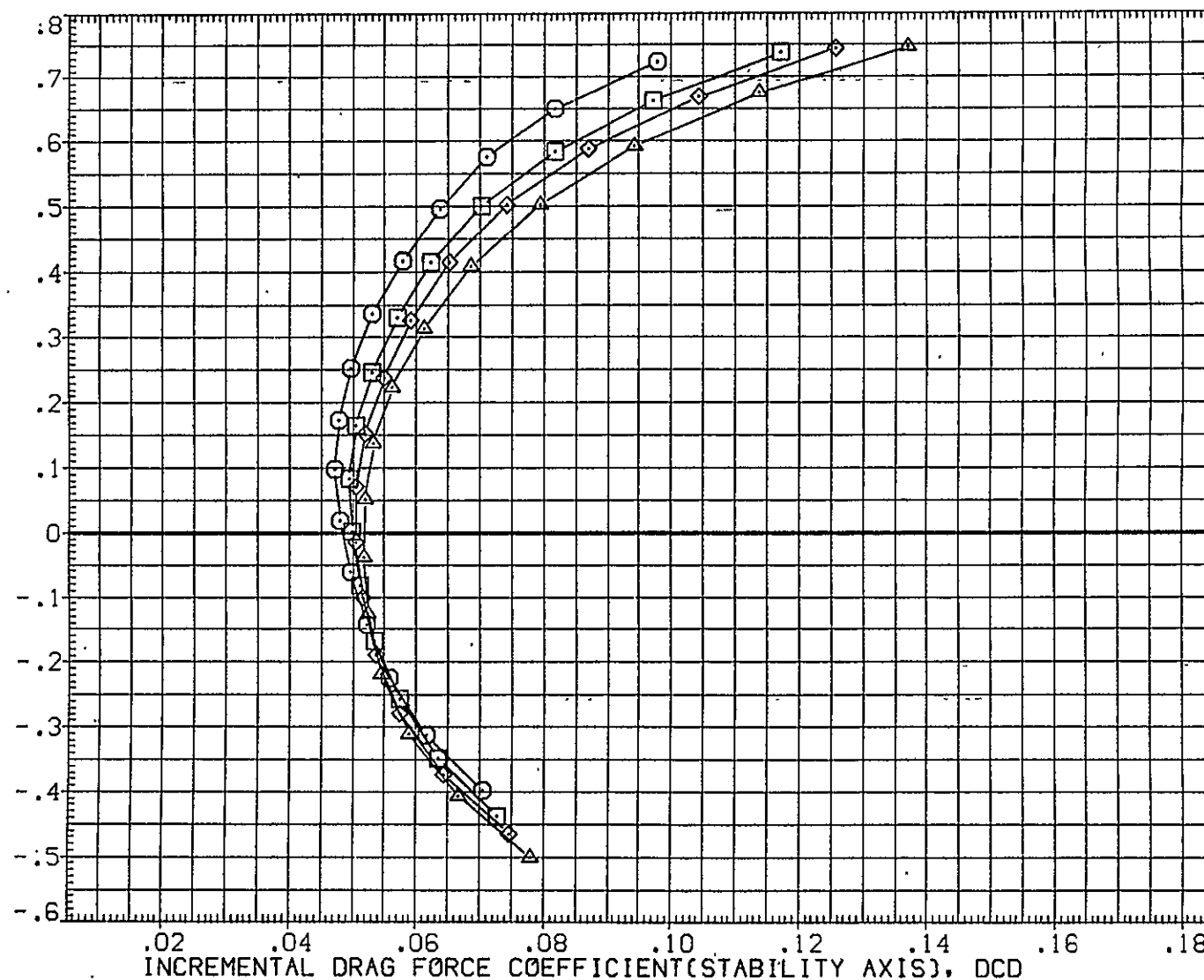


FIG. 63 747+ORB(10 DEG)+TIP FINS+STD SPD BRK, FLAPS UP LAUNCH(S=+1)

747

CA5 K1 F0 H15.6 V9.1 MINUS 0RB TC5 AT38.2 (BGM096)

SYMBOL	MACH	PARAMETRIC VALUES			
○	.300	BETA	.000	STAB	1.000
□	.500	RUD-U	.000	RUD-L	.000
◇	.600	ELV-1B	.000	ELV-0B	.000
△	.700	S1-2	.000	S3-4	45.000
		S5-6	20.000	10RB	9.700

REFERENCE INFORMATION		
SREF	5500.0000	SQ FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XM RP	1339.9100	IN. XC
YM RP	.0000	IN. YC
ZM RP	190.7500	IN. ZC
SCALE	.0300	

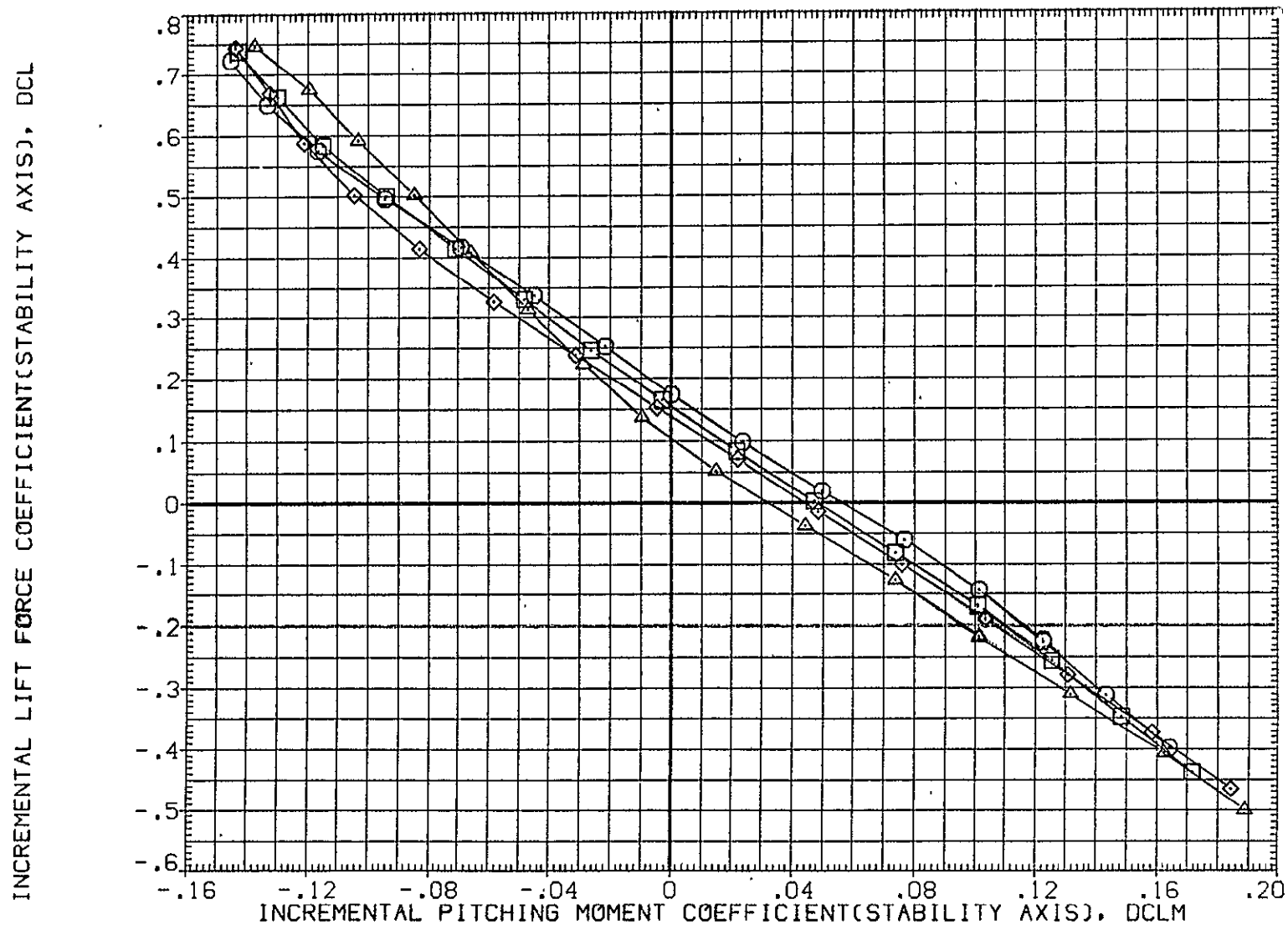


FIG. 63 747+0RB(10 DEG)+TIP FINS+STD SPD BRK,FLAPS UP LAUNCH(S=+1)

747

SYMBOL
 ○
 □
 ◇
 △

MACH

PARAMETRIC VALUES

.300	BETA	.000	STAB	1.000
.500	RUD-U	.000	RUD-L	.000
.600	ELV-IB	.000	ELV-OB	.000
.700	SI-2	.000	S3-4	45.000
	S5-6	20.000	IORB	9.700

REFERENCE INFORMATION

SREF	5500.0000	SQ.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

CARRIER FRL ANGLE OF ATTACK, ALPHA, DEG.

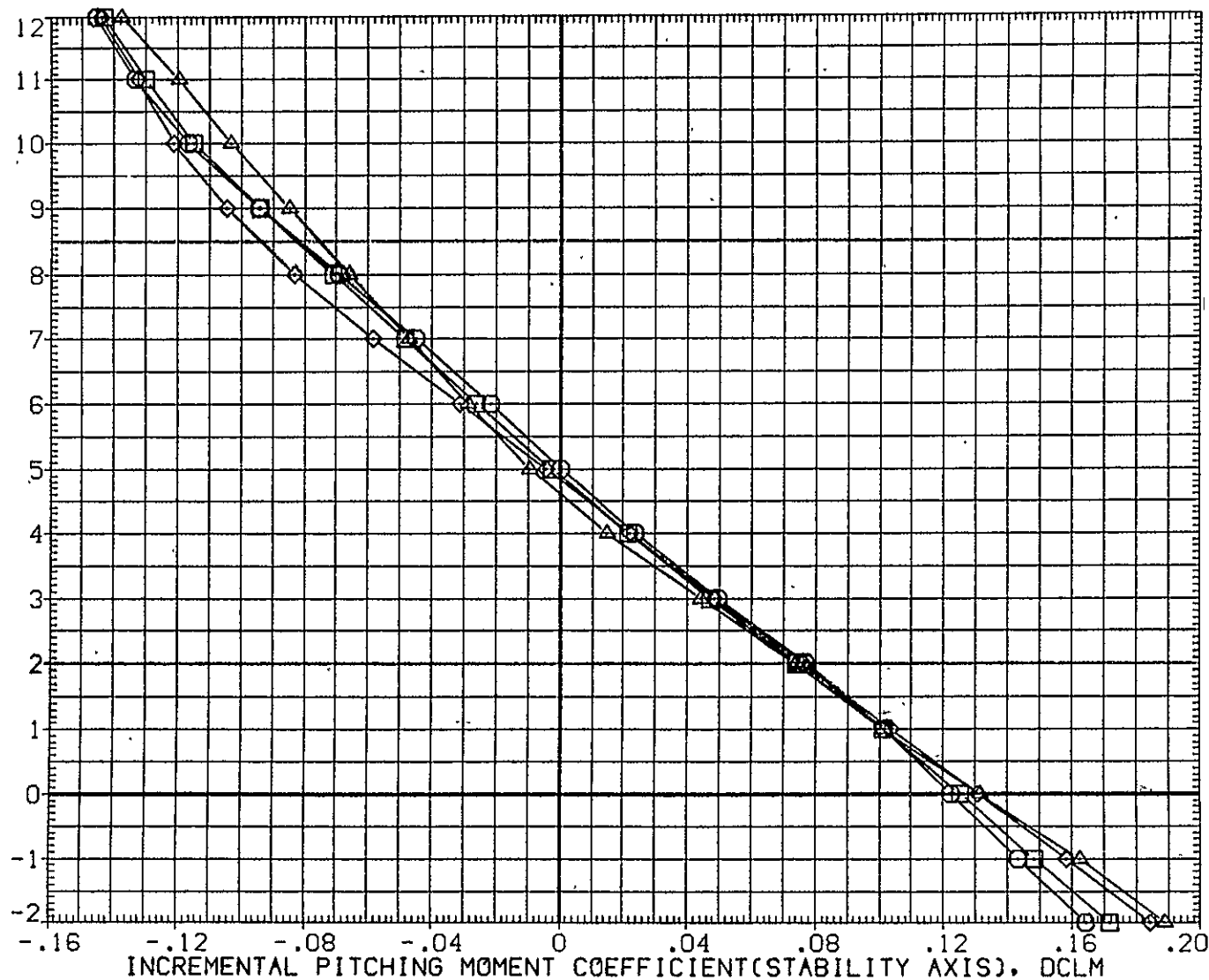


FIG. 63 747+ORB(10 DEG)+TIP FINS+STD SPD BRK, FLAPS UP LAUNCH(S=+1)

747

CA5 0RB TC5 AT38.2 (PRES. K1 F0 H15.6 V9.1)(YGM096)

SYMBOL	MACH	PARAMETRIC VALUES				REFERENCE INFORMATION		
○	.299	BETA	.000	STAB	1.000	SREF	2690.0000	50.FT.
□	.499	RUD-U	.000	RUD-L	.000	LREF	474.8100	IN.
◇	.601	ELV-IB	.000	ELV-OB	.000	BREF	936.6800	IN.
△	.701	S1-2	.000	S3-4	45.000	XMRP	1109.0000	IN. X0
		S5-6	20.000	IORB	9.700	YMRP	375.0000	IN. Y0
						ZMRP	375.0000	IN. Z0
						SCALE	.0300	

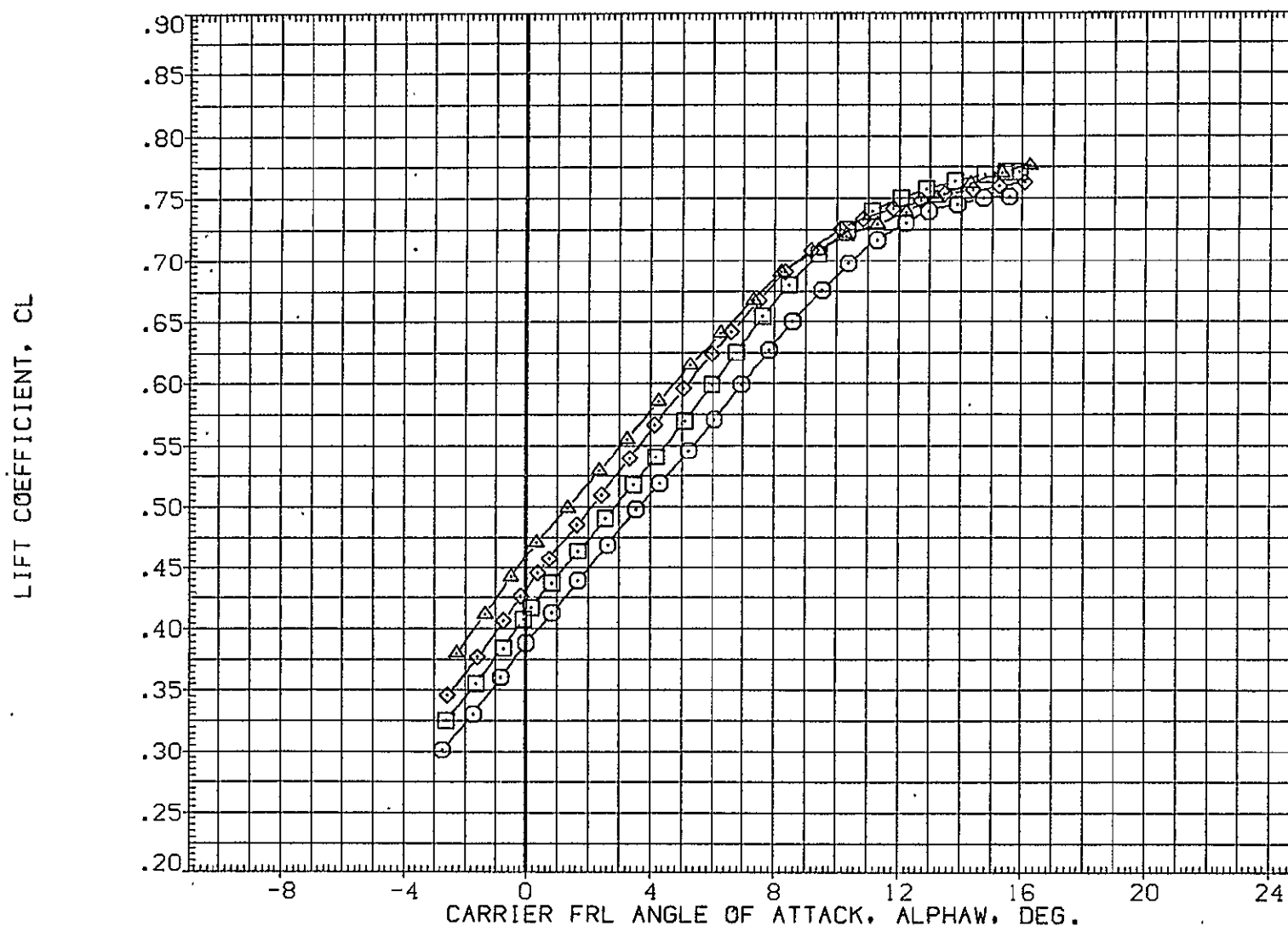


FIG. 64 747+0RB(10 DEG)+TIP FINS+STD SPD BRK, FLAPS UP LAUNCH(S=+1)

0RB

SYMBOL	MACH	PARAMETRIC VALUES			
○	.299	BETA	.000	STAB	1.000
□	.499	RUD-U	.000	RUD-L	.000
◇	.601	ELV-1B	.000	ELV-0B	.000
△	.701	S1-2	.000	S3-4	45.000
		S5-6	20.000	10RB	9.700

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN. X0
YMRP	.0000	IN. Y0
ZMRP	375.0000	IN. Z0
SCALE	.0300	

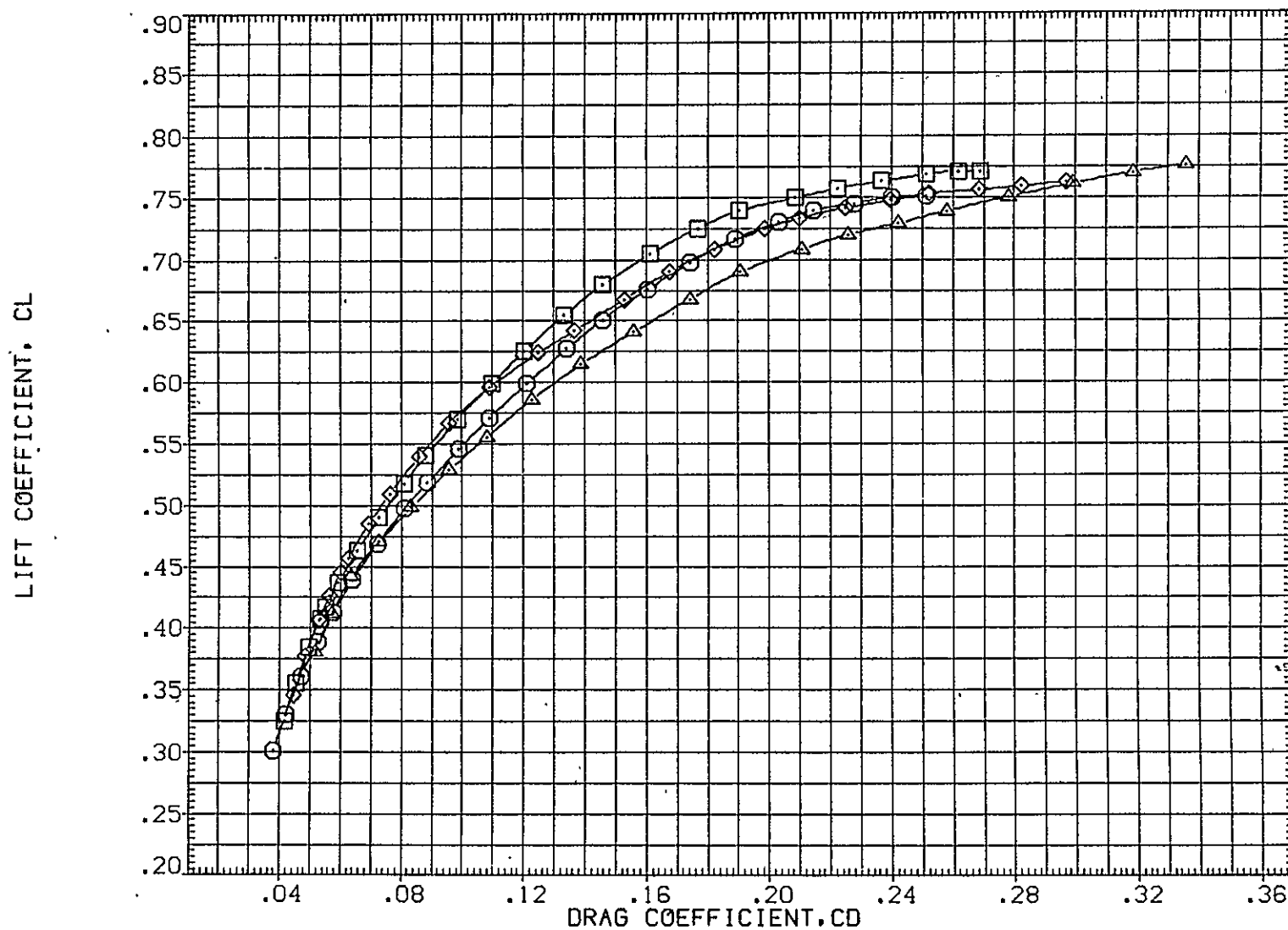


FIG. 64 747+ORB(10 DEG)+TIP FINS+STD SPD BRK, FLAPS UP LAUNCH(S=+1)

ORB

CA5 ORB TC5 AT38.2 (PRES. K1 FO H15.6 V9.1)(YGM096)

SYMBOL

MACH

PARAMETRIC VALUES

○
□
◇
△

.299 BETA .000 STAB 1.000
.499 RUD-U .000 RUD-L .000
.601 ELV-IB .000 ELV-OB .000
.701 S1-2 .000 S3-4 45.000
S5-6 20.000 IORB 9.700

REFERENCE INFORMATION

SREF 2690.0000 SQ.FT.
LREF 474.8100 IN.
BREF 936.6800 IN.
XMRP 1109.0000 IN. X0
YMRP .0000 IN. Y0
ZMRP 375.0000 IN. Z0
SCALE .0300

LIFT COEFFICIENT, CL

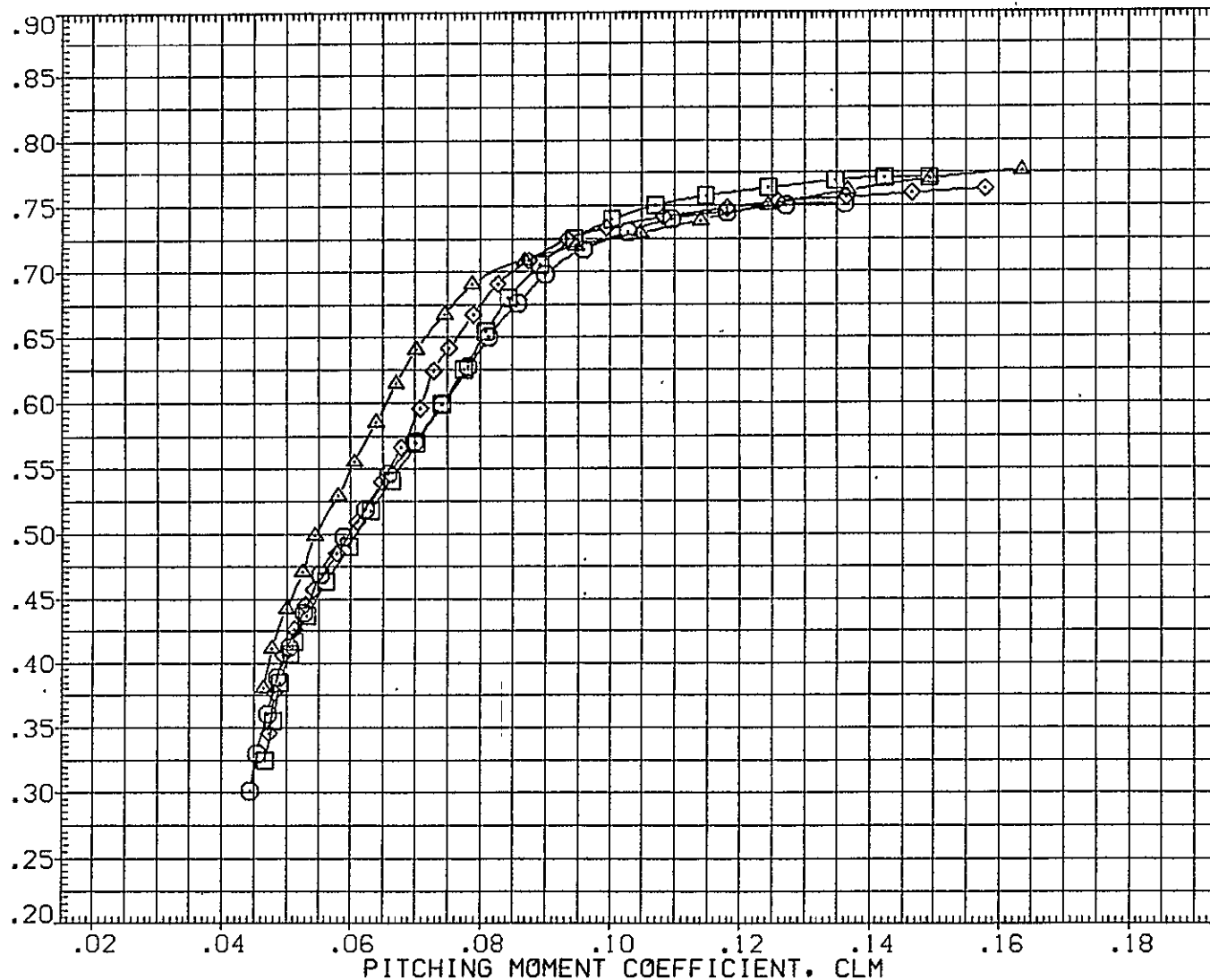


FIG. 64 747+ORB(10 DEG)+TIP FINS+STD SPD BRK, FLAPS UP LAUNCH(S=+1)

ORB

SYMBOL
○
◇
□
△

MACH

PARAMETRIC VALUES

.299	BETA	.000	STAB	1.000
.499	RUD-U	.000	RUD-L	.000
.601	ELV-1B	.000	ELV-0B	.000
.701	S1-2	.000	S3-4	45.000
	S5-6	20.000	10RB	9.700

REFERENCE INFORMATION

SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN. X0
YMRP	.0000	IN. Y0
ZMRP	375.0000	IN. Z0
SCALE	.0300	

CARRIER FRL ANGLE OF ATTACK, ALPHA, DEG.

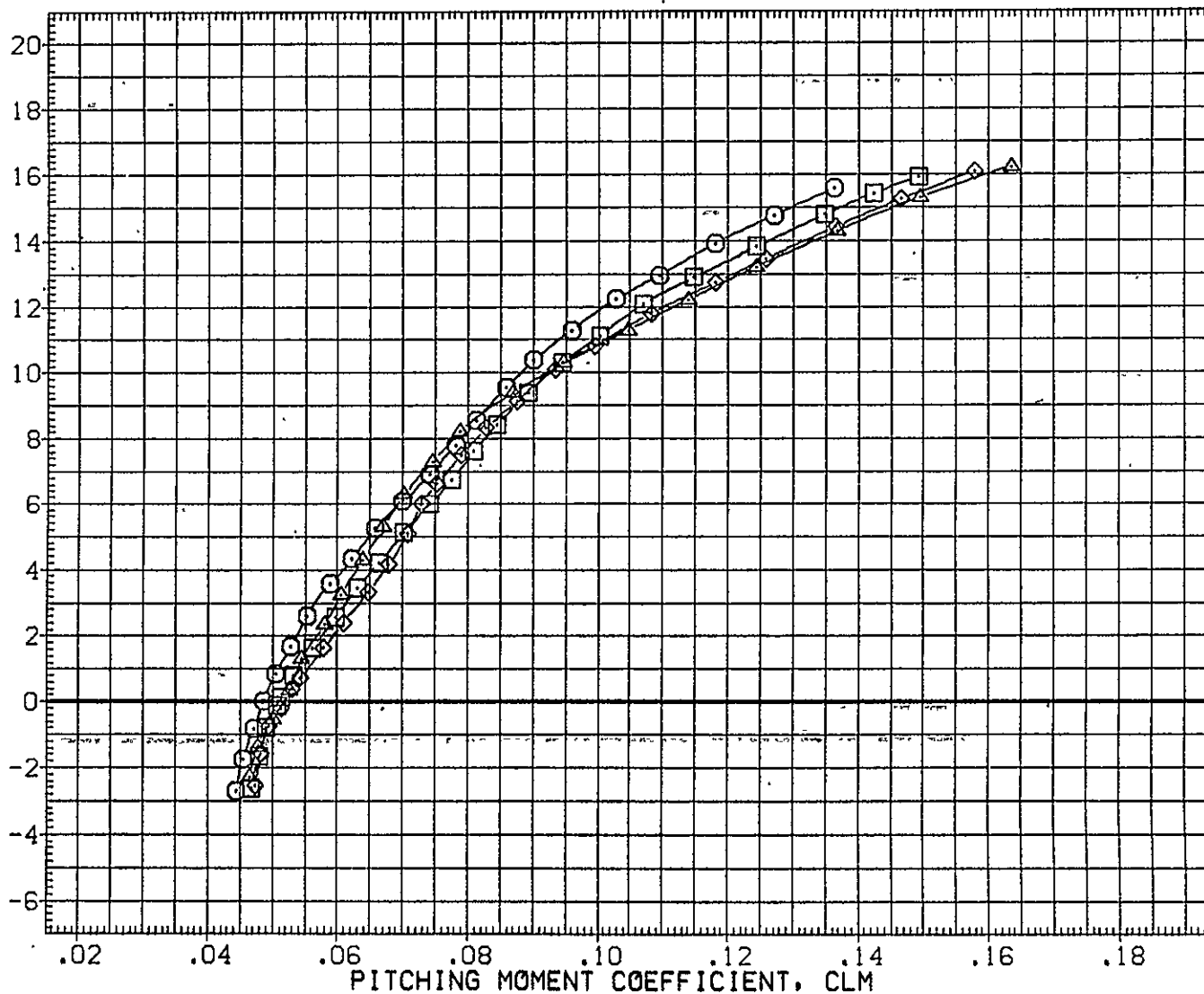


FIG. 64 747+ORB(10 DEG)+TIP FINS+STD SPD BRK, FLAPS UP LAUNCH(S=+1)

ORB

Small text in the top left corner, likely a reference or document identifier.

CA5 K1 FO

V9.1 (PLUS. ORB TC5 AT38.2A) (RGM098)

SYMBOL

○
□
◇
△
▽

MACH

.150
.300
.500
.600
.700

BETA
RUD-L
S3-4
IORB

PARAMETRIC VALUES

.000 .000 .000
.000 .000 .000
45.000 20.000
7.850

REFERENCE INFORMATION

SREF 5500.0000 SQ.FT.
LREF 327.8000 IN.
BREF 2348.0000 IN.
XMRP 1339.9100 IN. XC
YMRP .0000 IN. YC
ZMRP 190.7500 IN. ZC
SCALE .0300

LIFT COEFFICIENT, CL

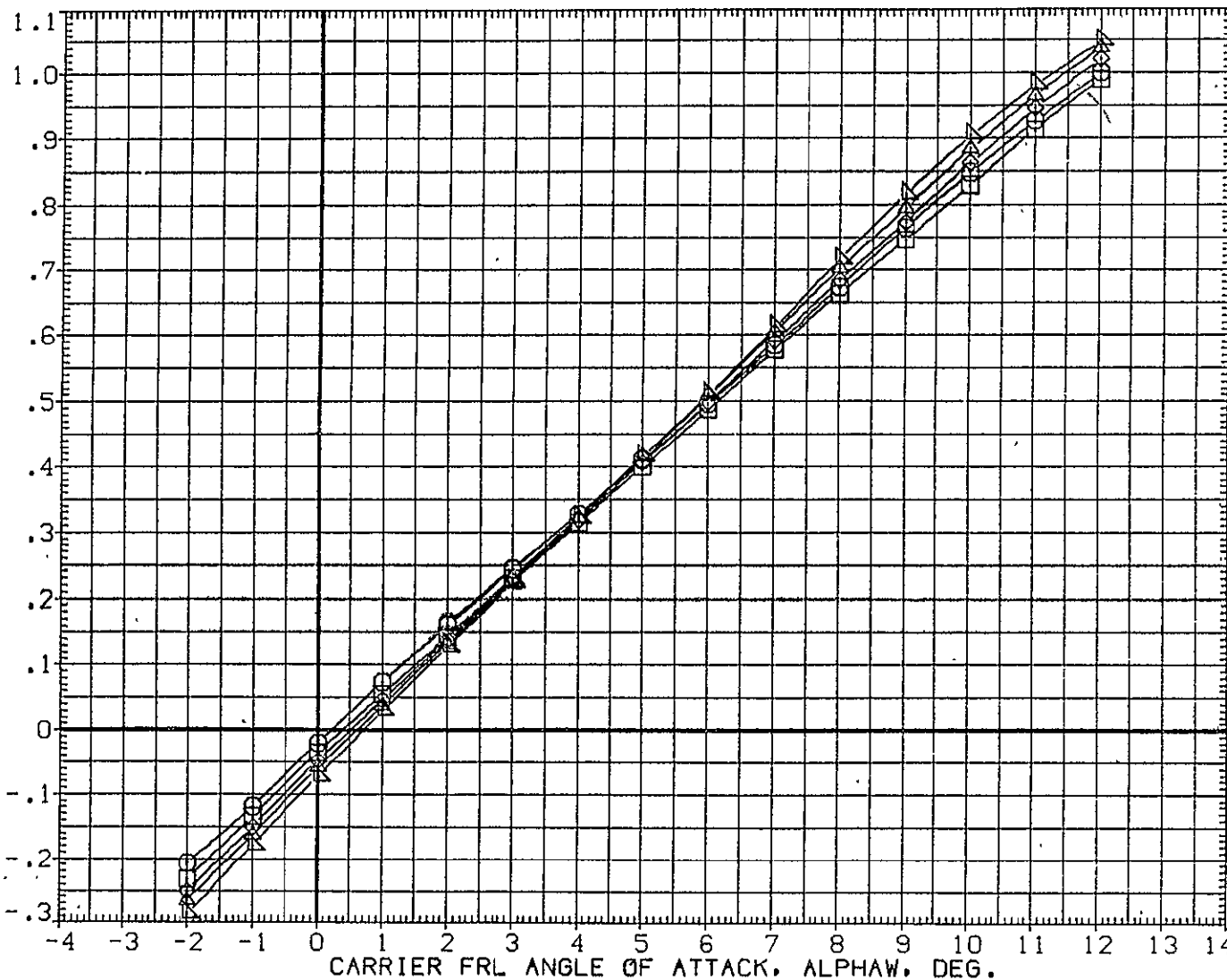


FIG. 65 747+ORB(8 DEG)+STD SPD BRK, FLAPS UP LAUNCH, HORIZ OFF

TOTAL

SYMBOL
 ○
 □
 ◇
 △
 ▽

MACH	BETA	PARAMETRIC VALUES		
.150	BETA	.000	RUD-U	.000
.300	RUD-L	.000	S1-2	.000
.500	S3-4	45.000	S5-6	20.000
.600	10RB	7.850		
.700				

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

LIFT COEFFICIENT, CL

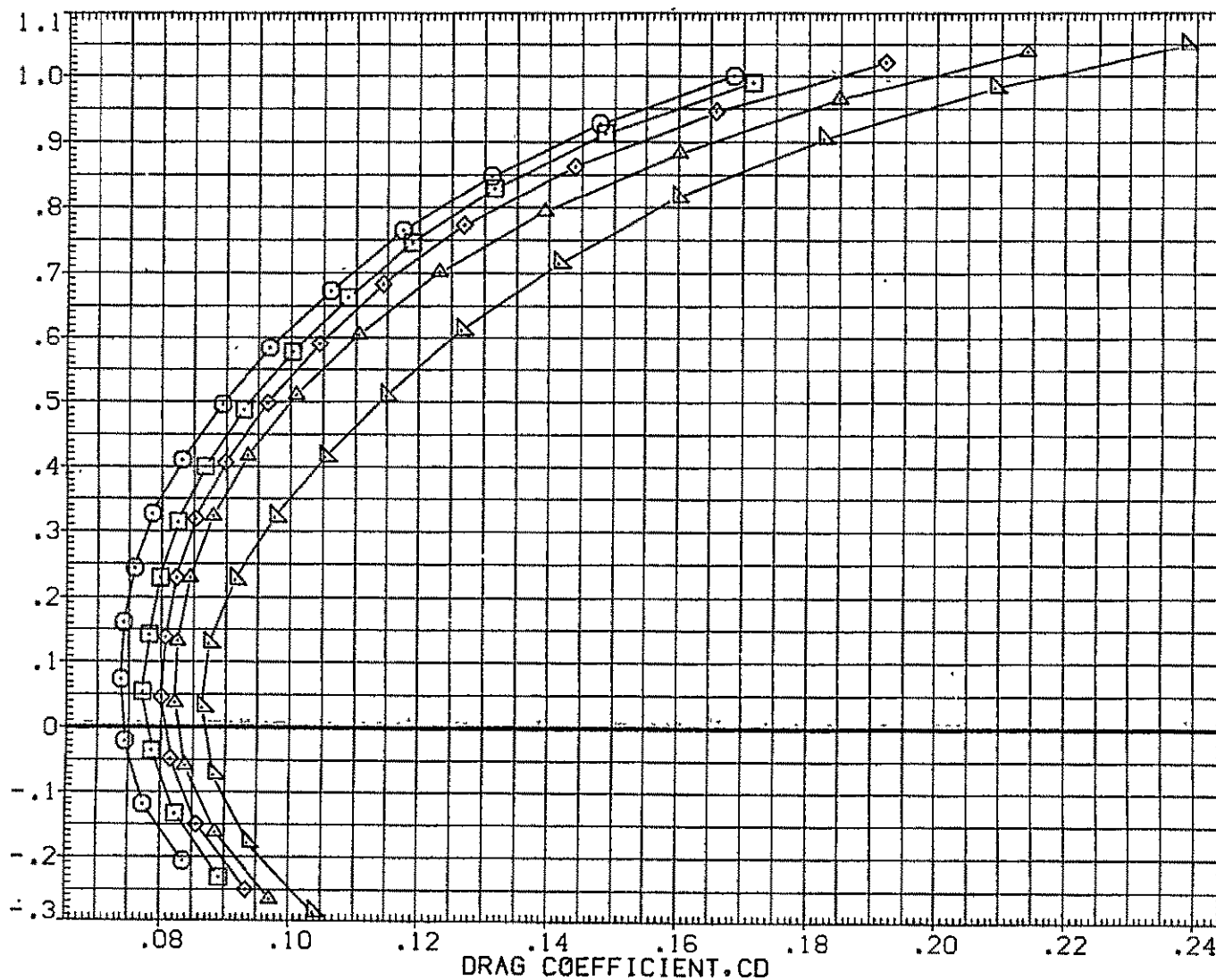


FIG. 65 747+ORB(8 DEG)+STD SPD BRK, FLAPS UP LAUNCH, HORIZ OFF

CA5 K1 FO

V9.1 (PLUS. ORB TC5 AT38.2A)(RGM098)

SYMBOL	MACH	PARAMETRIC VALUES				REFERENCE INFORMATION		
○	.150	BETA	.000	RUD-U	.000	SREF	5500.0000	SQ.FT.
□	.300	RUD-L	.000	S1-2	.000	LREF	327.8000	IN.
◇	.500	S3-4	45.000	S5-6	20.000	BREF	2348.0000	IN.
△	.600	IORB	7.850			XMRP	1339.9100	IN. XC
▽	.700					YMRP	.0000	IN. YC
						ZMRP	190.7500	IN. ZC
						SCALE	.0300	

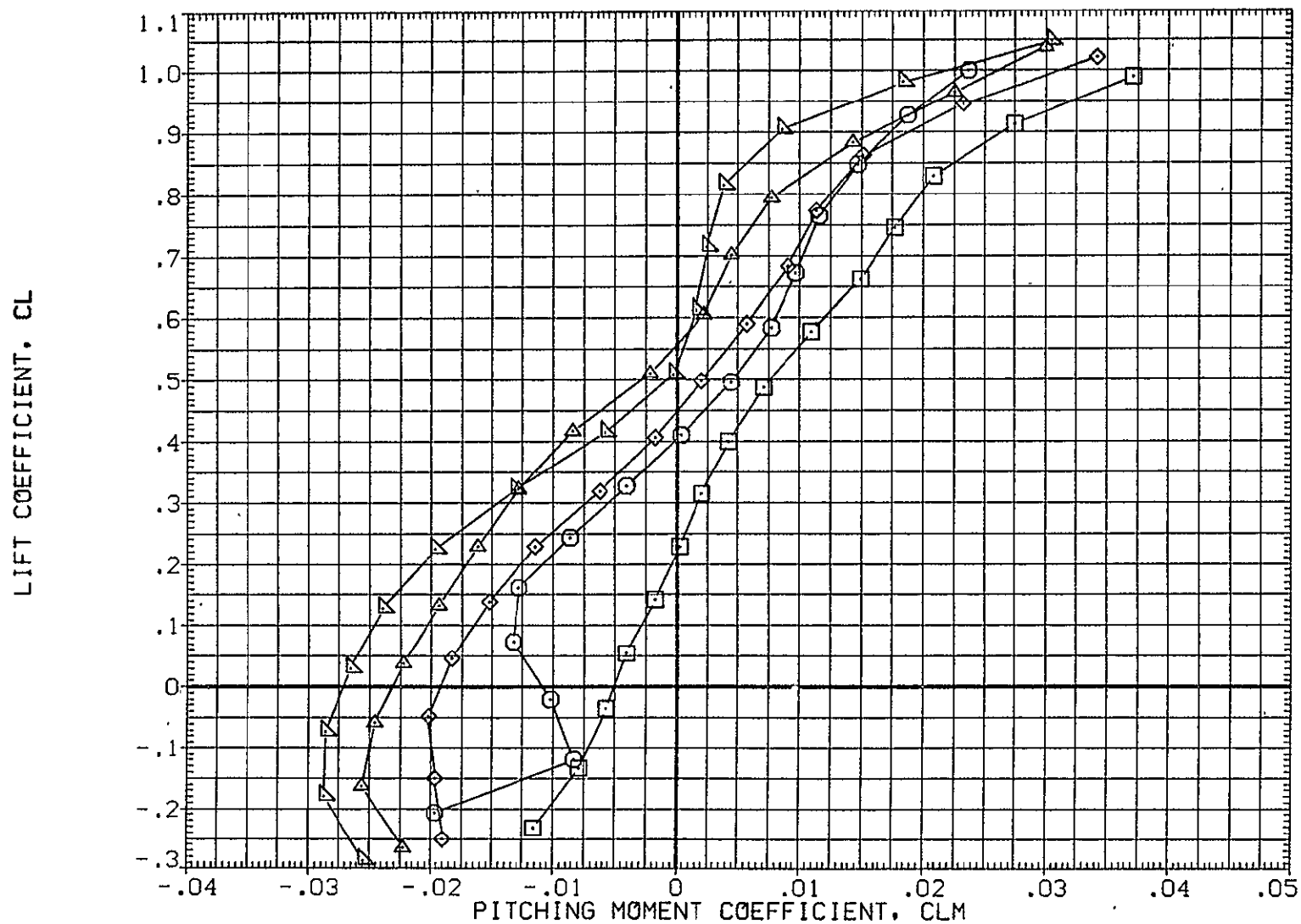


FIG. 65 747+ORB(8 DEG)+STD SPD BRK, FLAPS UP LAUNCH, HORIZ OFF

TOTAL

SYMBOL	MACH	PARAMETRIC VALUES			
○	.150	BETA	.000	RUD-U	.000
□	.300	RUD-L	.000	S1-2	.000
◇	.500	S3-4	45.000	S5-6	20.000
△	.600	10RB	7.850		
▽	.700				

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

CARRIER FRL ANGLE OF ATTACK, ALPHA, DEG.

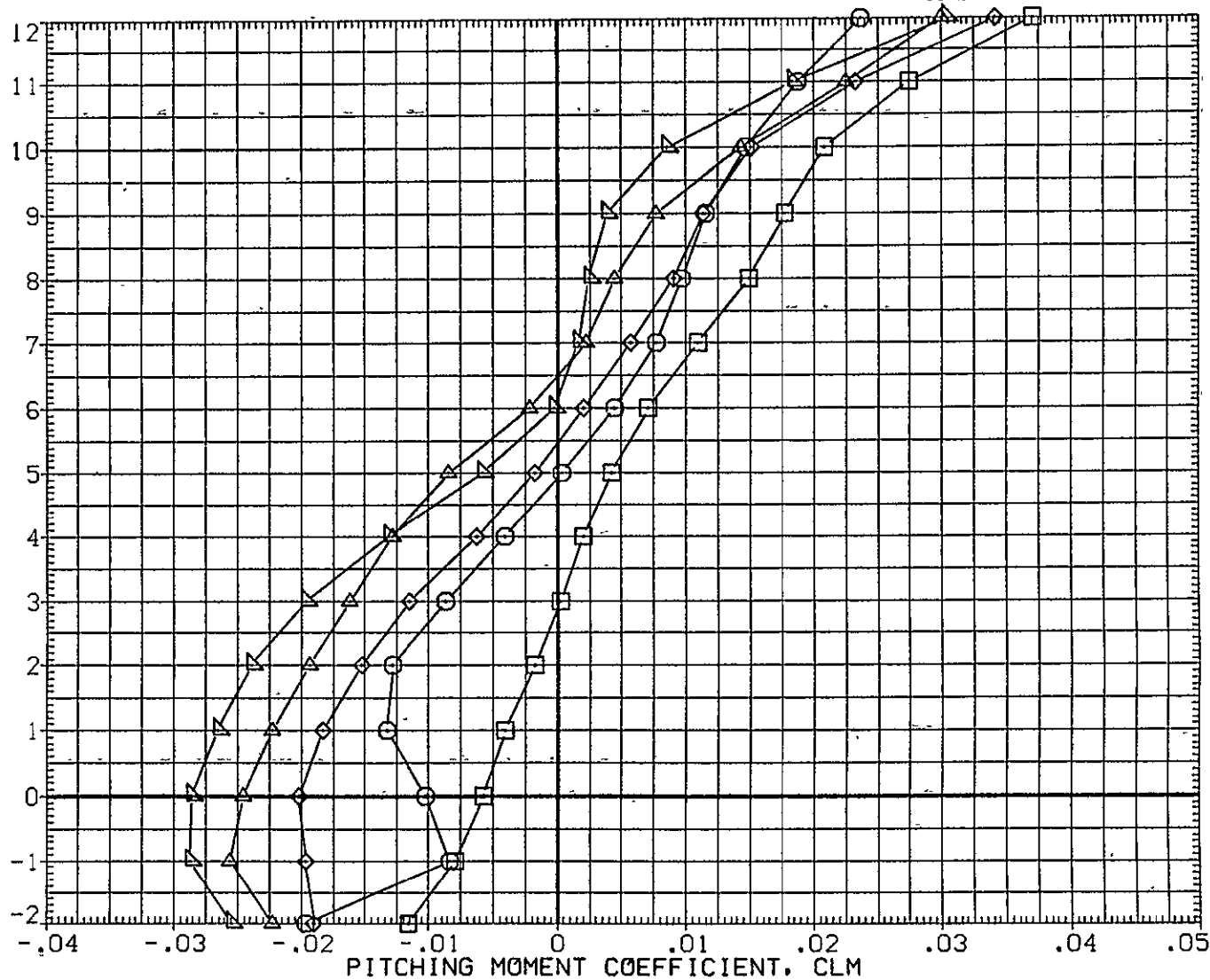


FIG. 65 747+ORB(8 DEG)+STD SPD BRK, FLAPS UP LAUNCH, HORIZ OFF

TOTAL

PAGE 260

CA5 K1 F0

V9.1 MINUS ORB TC5 AT38.2A (BGM098)

SYMBOL	MACH	PARAMETRIC VALUES			
○	.150	BETA	.000	RUD-U	.000
□	.300	RUD-L	.000	S1-2	.000
◇	.500	S3-4	45.000	S5-6	20.000
△	.600	ICRB	7.850		
▽	.700				

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

INCREMENTAL LIFT FORCE COEFFICIENT(STABILITY AXIS), DCL

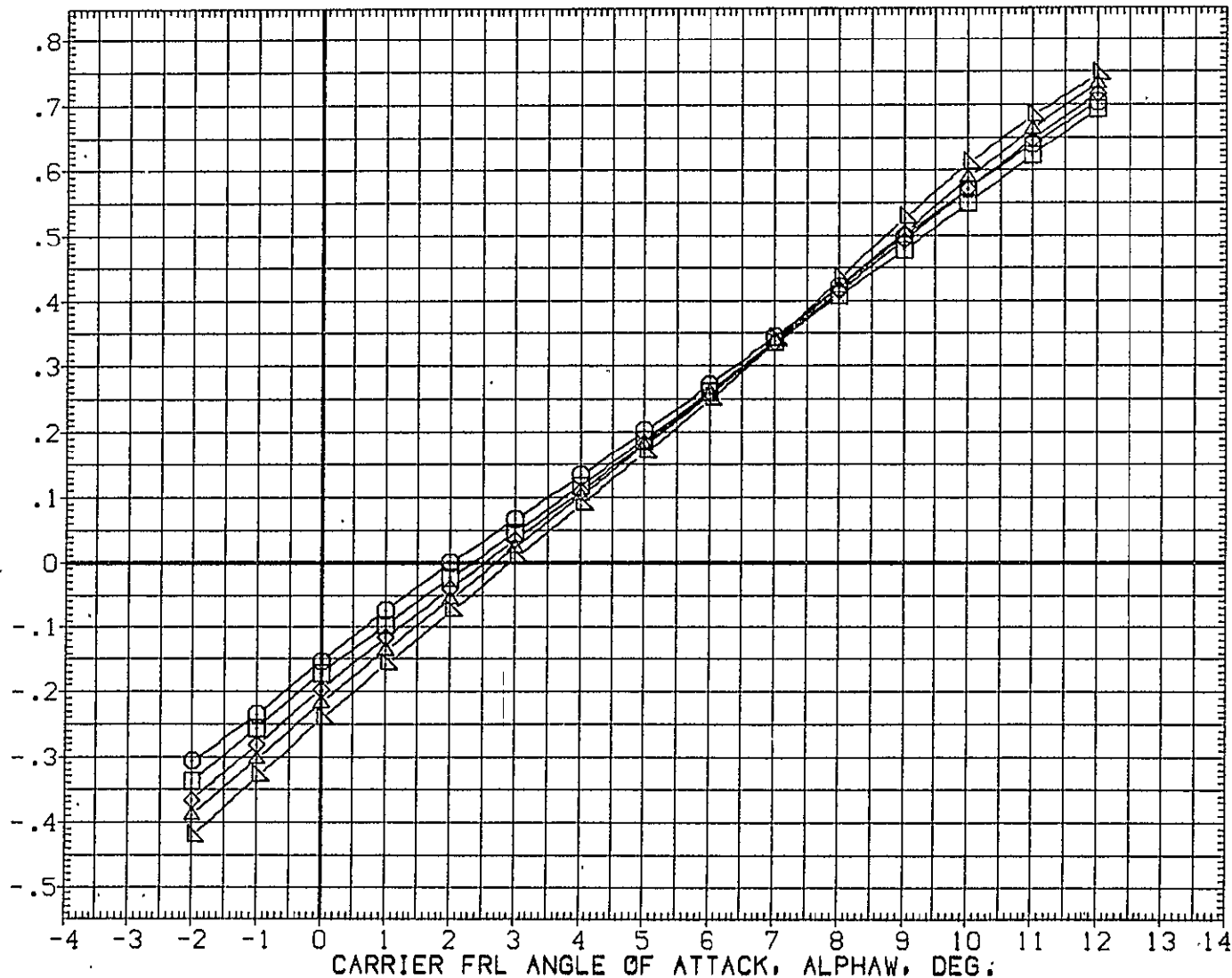


FIG. 66 747+ORB(8 DEG)+STD SPD BRK, FLAPS UP LAUNCH, HORIZ OFF

747

SYMBOL

MACH

PARAMETRIC VALUES

REFERENCE INFORMATION

○
□
◇
△
▽

.150
.300
.500
.600
.700

BETA
RUD-L
S3-4
10RB

.000
.000
45.000
7.850

RUD-U
SI-2
S5-6

.000
.000
20.000

SREF 5500.0000 SQ.FT.
LREF 327.8000 IN.
BREF 2348.0000 IN.
XMRP 1339.9100 IN. XC
YMRP .0000 IN. YC
ZMRP 190.7500 IN. ZC
SCALE .0300

INCREMENTAL LIFT FORCE COEFFICIENT(STABILITY AXIS), DCL

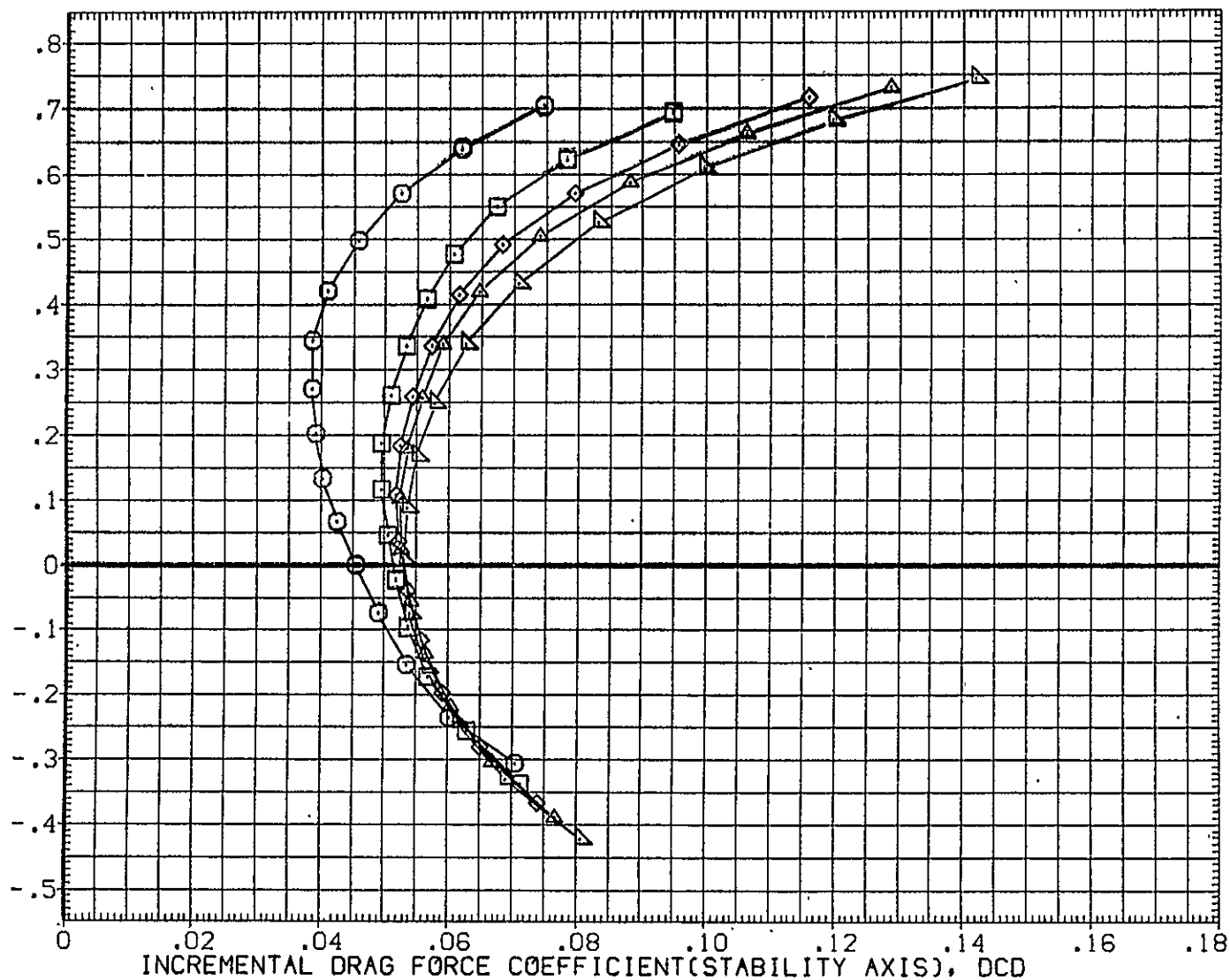


FIG. 66 747+ORB(8 DEG)+STD SPD BRK, FLAPS UP LAUNCH, HORIZ OFF

747

CA5 K1 FO

V9.1 MINUS ORB TC5 AT38.2A (BGM098)

SYMBOL

MACH

PARAMETRIC VALUES

○
□
◇
△
▽

.150
.300
.500
.600
.700

BETA
RUD-L
S3-4
IORB

.000
.000
45.000
7.850

RUD-U
S1-2
S5-6

.000
.000
20.000

REFERENCE INFORMATION

SREF 5500.0000 SQ.FT.
LREF 327.8000 IN.
BREF 2348.0000 IN.
XMRP 1339.9100 IN. XC
YMRP .0000 IN. YC
ZMRP 190.7500 IN. ZC
SCALE .0300

INCREMENTAL LIFT FORCE COEFFICIENT(STABILITY AXIS), DCL

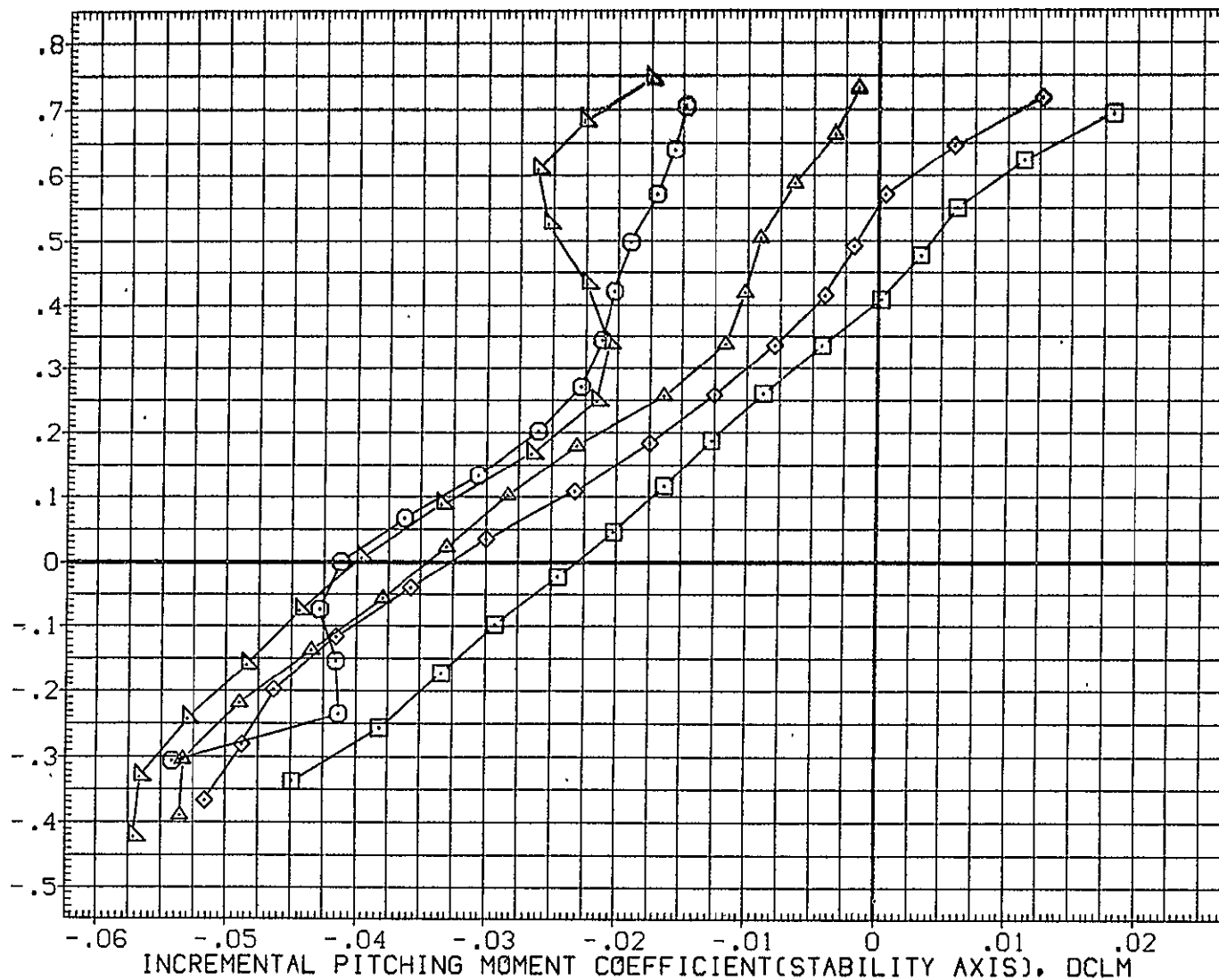


FIG. 66 747+ORB(8 DEG)+STD SPD BRK, FLAPS UP LAUNCH, HORIZ OFF

747

SYMBOL
 ▽
 △
 ◇
 □
 ○

MACH	BETA	PARAMETRIC VALUES	RUD-U	
.150		.000	.000	
.300	RUD-L	.000	S1-2	.000
.500	S3-4	45.000	S5-6	20.000
.600	IORB	7.850		
.700				

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

CARRIER FRL ANGLE OF ATTACK, ALPHAW, DEG.

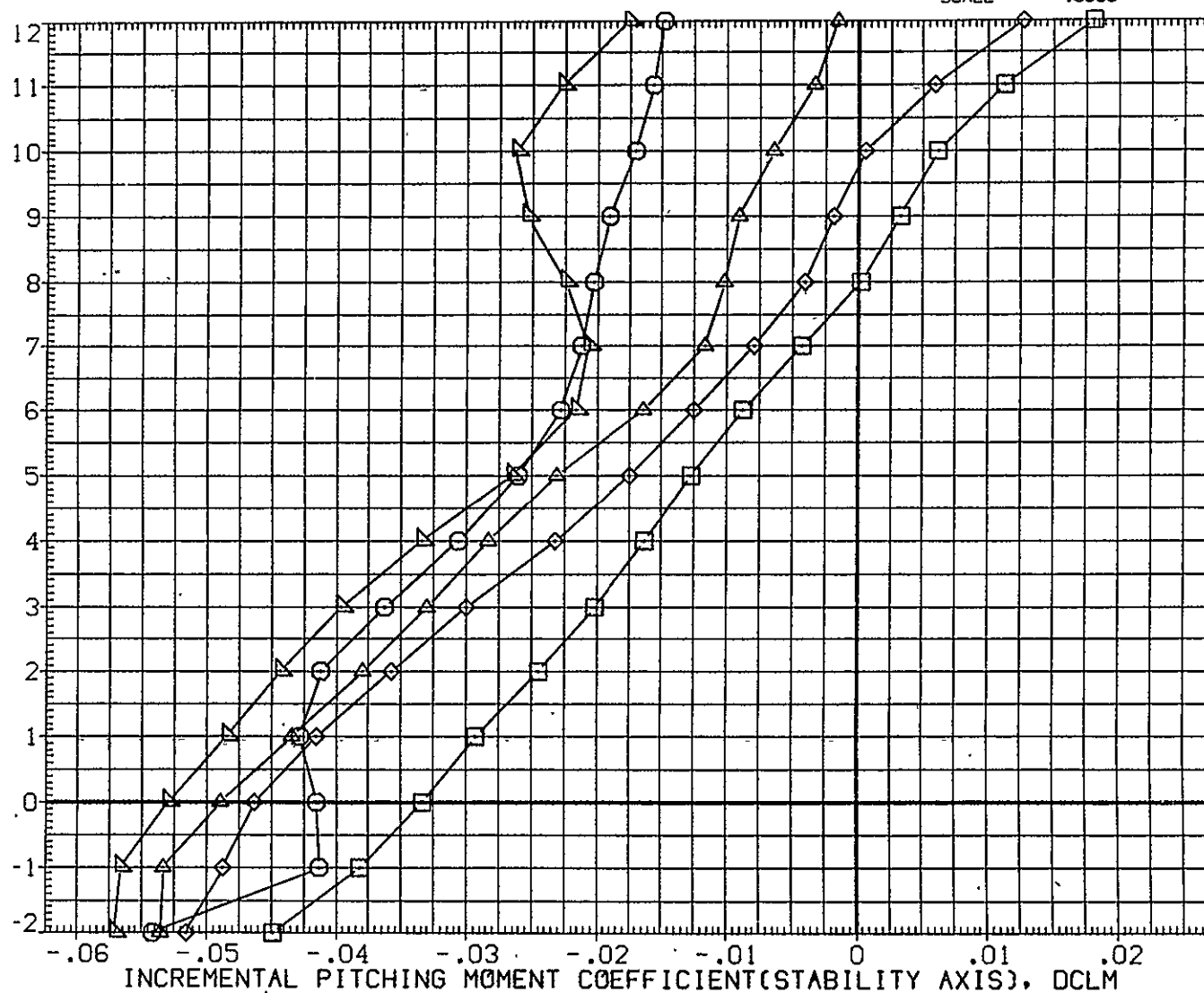


FIG. 66 747+ORB(8 DEG)+STD SPD BRK, FLAPS UP LAUNCH, HORIZ OFF

747

CA5 0RB TC5 AT38.2A (PRES. K1 F0

V9.1)(YGM098)

SYMBOL	MACH	PARAMETRIC VALUES			
○	.149	BETA	.000	RUD-U	.000
□	.299	RUD-L	.000	S1-2	.000
◇	.500	S3-4	45.000	S5-6	20.000
△	.599	IORB	7.850		
▽	.700				

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN. X0
YMRP	.0000	IN. Y0
ZMRP	375.0000	IN. Z0
SCALE	.0300	

LIFT COEFFICIENT, CL

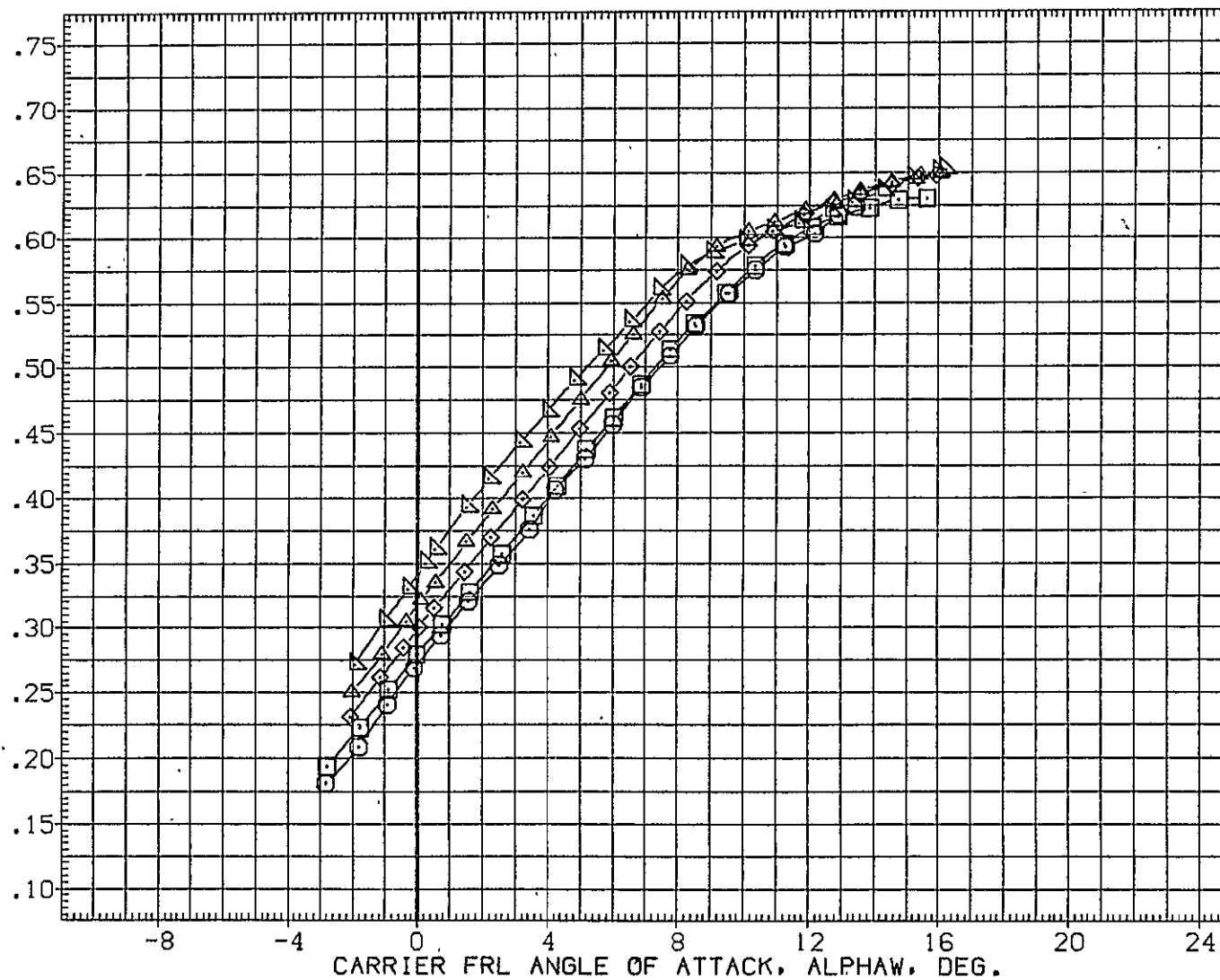


FIG. 67 747+0RB(8 DEG)+STD SPD BRK, FLAPS UP LAUNCH, HORIZ OFF

0RB

SYMBOL

MACH

PARAMETRIC VALUES

○
□
◇
△
▽.149
.299
.500
.599
.700BETA
RUD-L
S3-4
IORB.000
.000
45.000
7.850RUD-U
S1-2
S5-6.000
.000
20.000

REFERENCE INFORMATION

SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN. X0
YMRP	.0000	IN. Y0
ZMRP	375.0000	IN. Z0
SCALE	.0300	

LIFT COEFFICIENT, CL

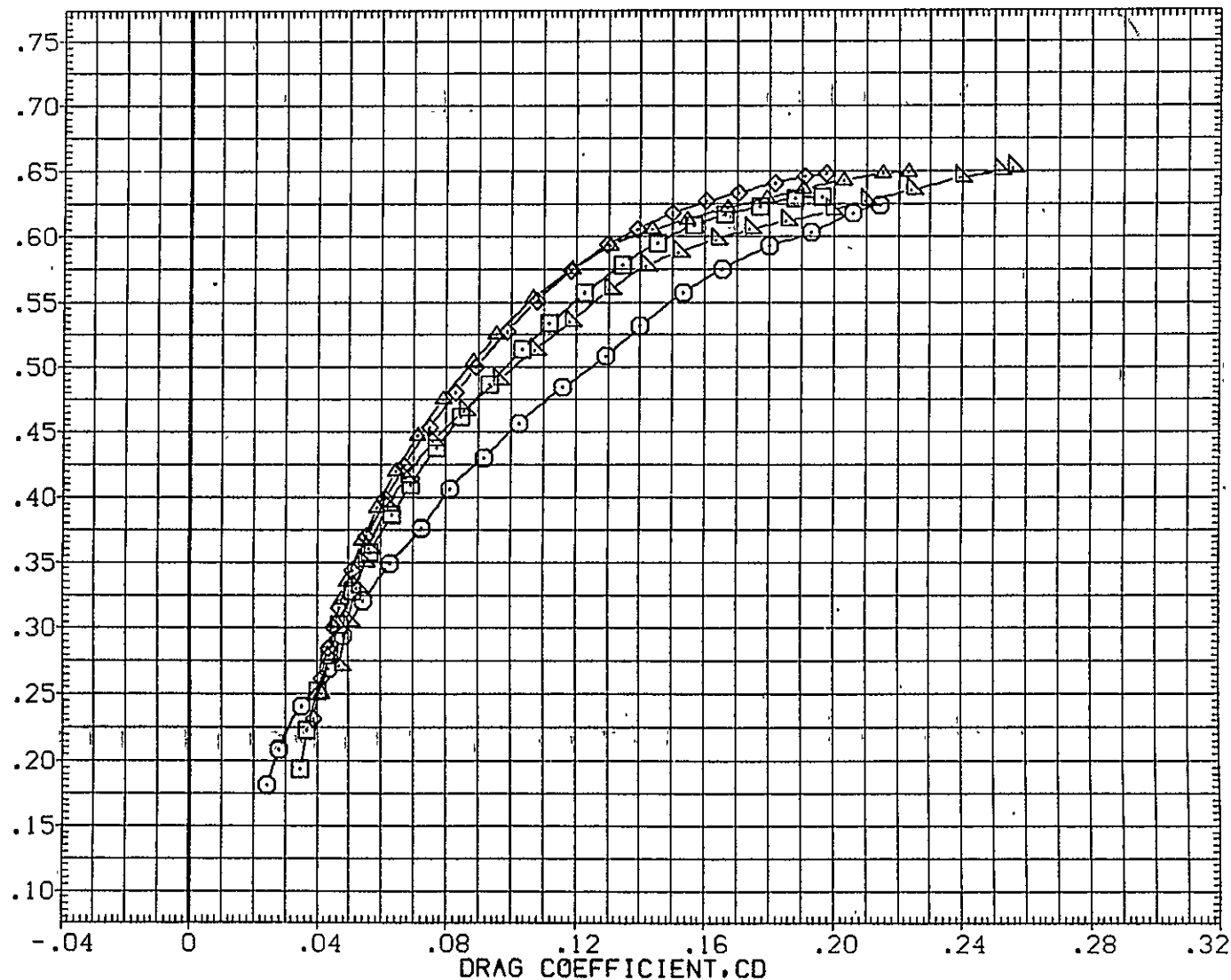


FIG. 67 747+ORB(8 DEG)+STD SPD BRK, FLAPS UP LAUNCH, HORIZ OFF

ORB

CA5 0RB TC5 AT38.2A (PRES. K1 FO

V9.1)(YGM098)

SYMBOL	MACH	PARAMETRIC VALUES			
○	.149	BETA	.000	RUD-U	.000
□	.299	RUD-L	.000	S1-2	.000
◇	.500	S3-4	45.000	S5-6	20.000
△	.599	10RB	7.850		
▽	.700				

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN. X0
YMRP	.0000	IN. Y0
ZMRP	375.0000	IN. Z0
SCALE	.0300	

LIFT COEFFICIENT, CL

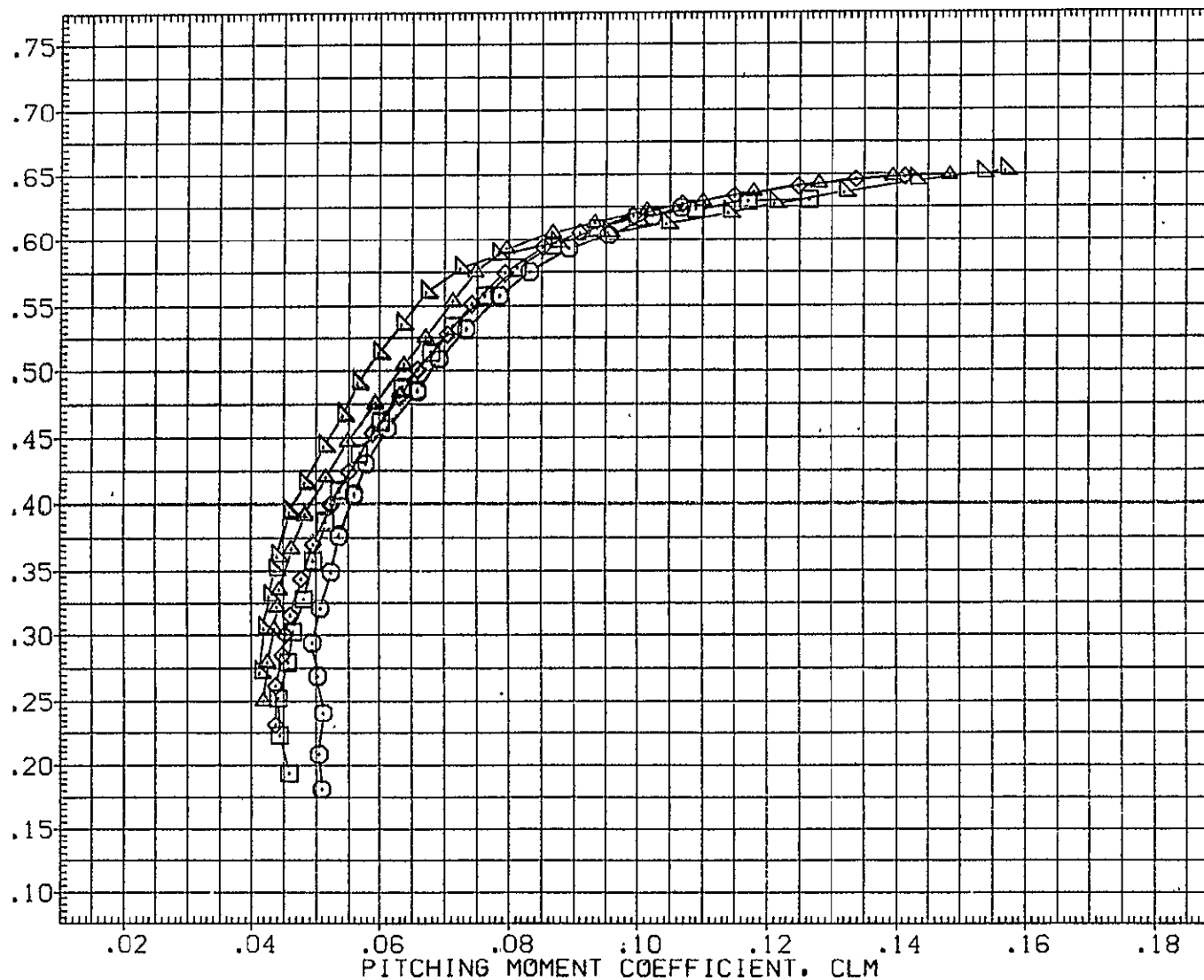


FIG. 67 747+0RB(8 DEG)+STD SPD BRK, FLAPS UP LAUNCH, HORIZ OFF

0RB

SYMBOL	MACH	BETA	PARAMETRIC VALUES
○	.149	BETA	.000 RUD-U .000
□	.299	RUD-L	.000 S1-2 .000
◇	.500	S3-4	45.000 S5-6 20.000
△	.599	IORB	7.850
▽	.700		

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN. X0
YMRP	.0000	IN. Y0
ZMRP	375.0000	IN. Z0
SCALE	.0300	

CARRIER FRL ANGLE OF ATTACK, ALPHA, DEG.

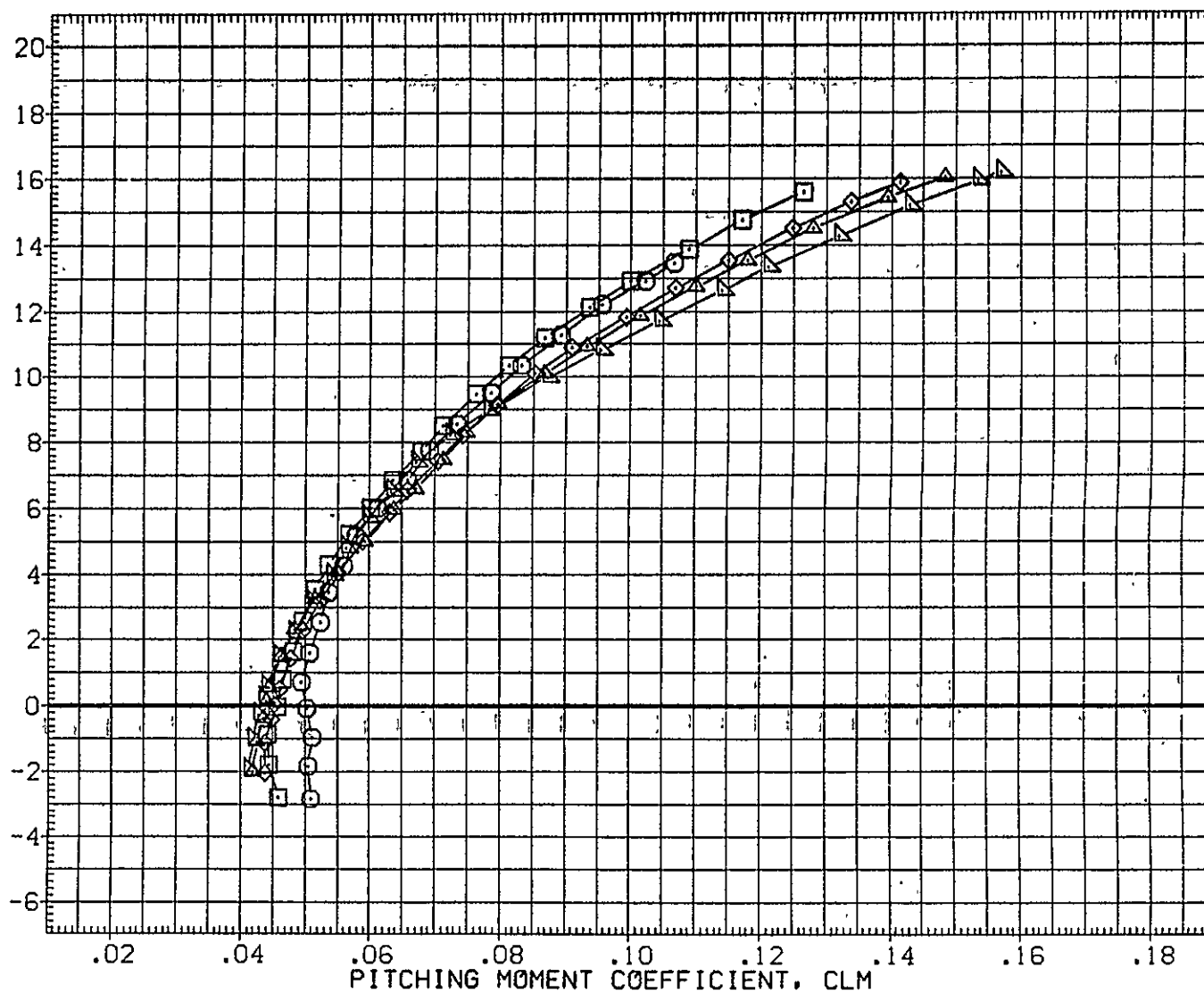


FIG. 67 747+ORB(8 DEG)+STD SPD BRK, FLAPS UP LAUNCH, HORIZ OFF

ORB

CA5 K1 F0		V9.1 (PLUS. ORB N0Z AT38.2A) (RGM099)				REFERENCE INFORMATION		
SYMBOL	MACH	PARAMETRIC VALUES				SREF	5500.0000	SQ.FT.
○	.300	BETA	.000	RUD-U	.000	LREF	327.8000	IN.
□	.500	RUD-L	.000	S1-2	.000	BREF	2348.0000	IN.
◇	.600	S3-4	45.000	S5-6	20.000	XMRP	1339.9100	IN. XC
△	.700	I0RB	7.850			YMRP	.0000	IN. YC
						ZMRP	190.7500	IN. ZC
						SCALE	.0300	

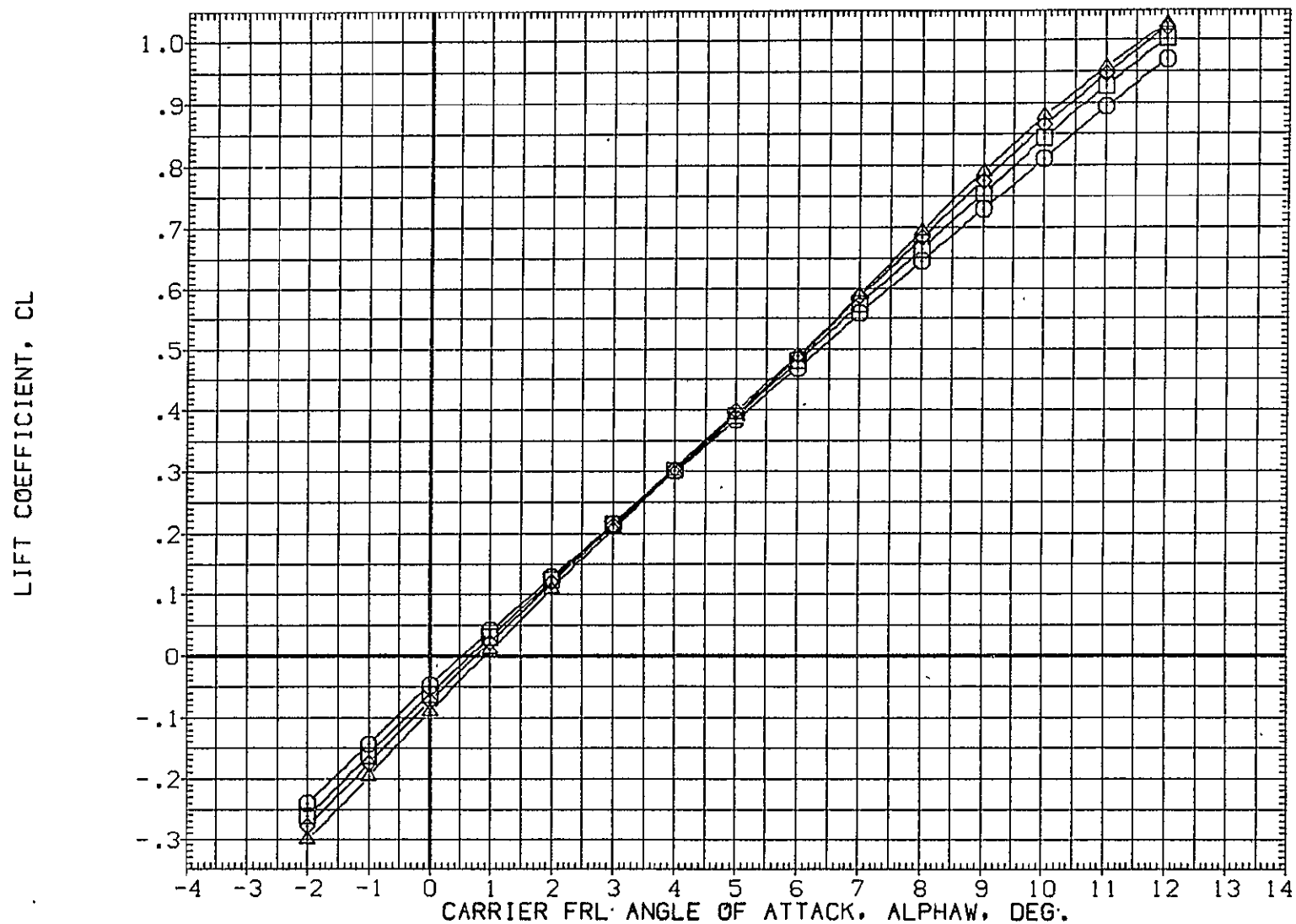


FIG. 68 747+ORB(8 DEG)+STD SPD BRK, FLAPS UP LAUNCH, HOR OFF, TAIL CONE OFF TOTAL

SYMBOL	MACH	PARAMETRIC VALUES
○	.300	BETA .000 RUD-U .000
□	.500	RUD-L .000 S1-2 .000
◇	.600	S3-4 45.000 S5-6 20.000
△	.700	10RB .7.850

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

LIFT COEFFICIENT, CL

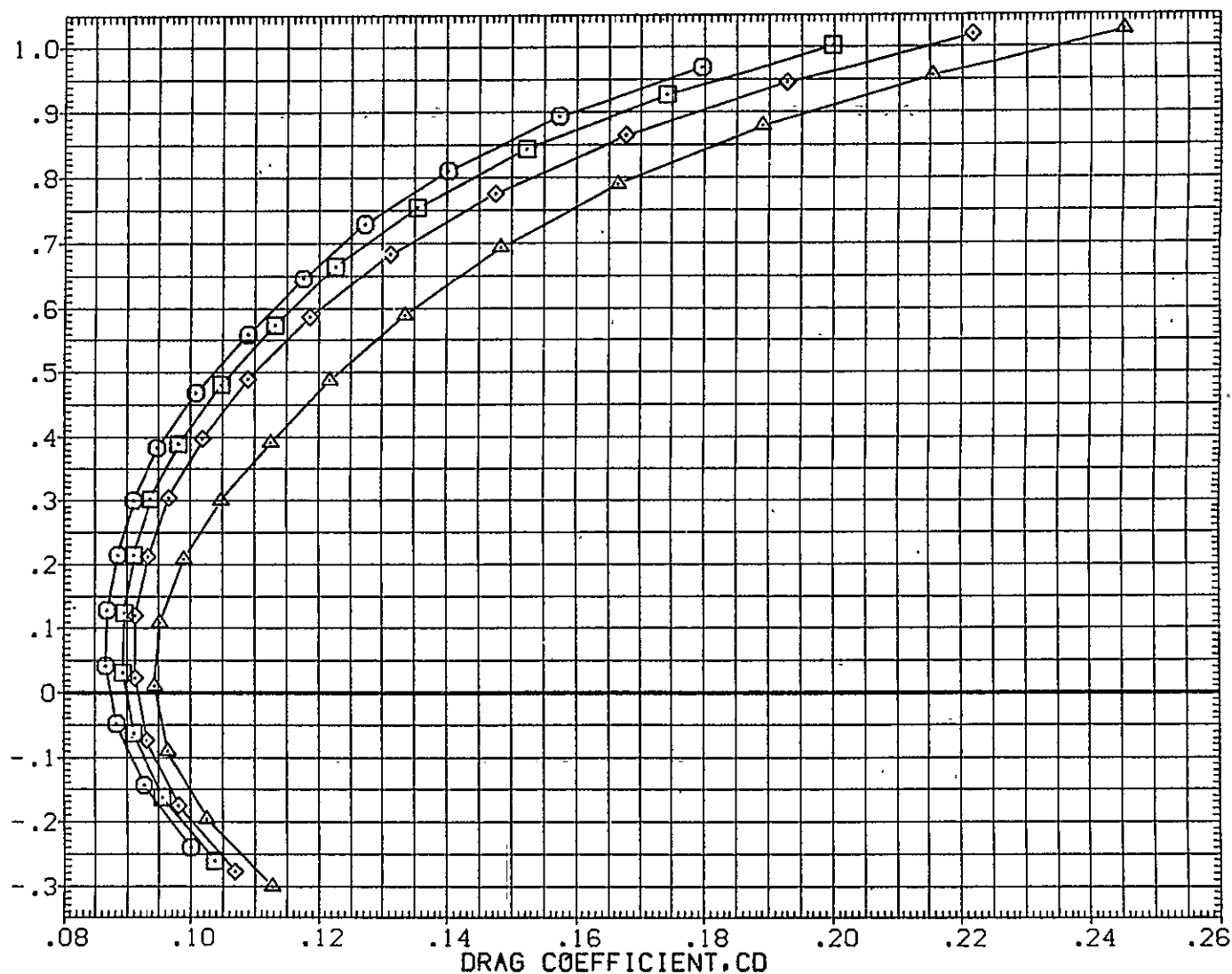


FIG. 68 747+ORB(8 DEG)+STD SPD BRK, FLAPS UP LAUNCH, HOR OFF, TAIL CONE OFF TOTAL

CA5 K1 F0

V9.1 (PLUS. 0RB N0Z AT38.2A)(RGM099)

SYMBOL

MACH

PARAMETRIC VALUES

REFERENCE INFORMATION

○

.300

BETA

.000

RUD-U

.000

SREF

5500.0000

SQ.FT.

□

.500

RUD-L

.000

S1-2

.000

LREF

327.8000

IN.

◇

.600

S3-4

45.000

S5-6

20.000

BREF

2348.0000

IN.

△

.700

10RB

7.850

XMRP

1339 9100

IN. XC

YMRP

.0000

IN. YC

ZMRP

190.7500

IN. ZC

SCALE

.0300

LIFT COEFFICIENT, CL

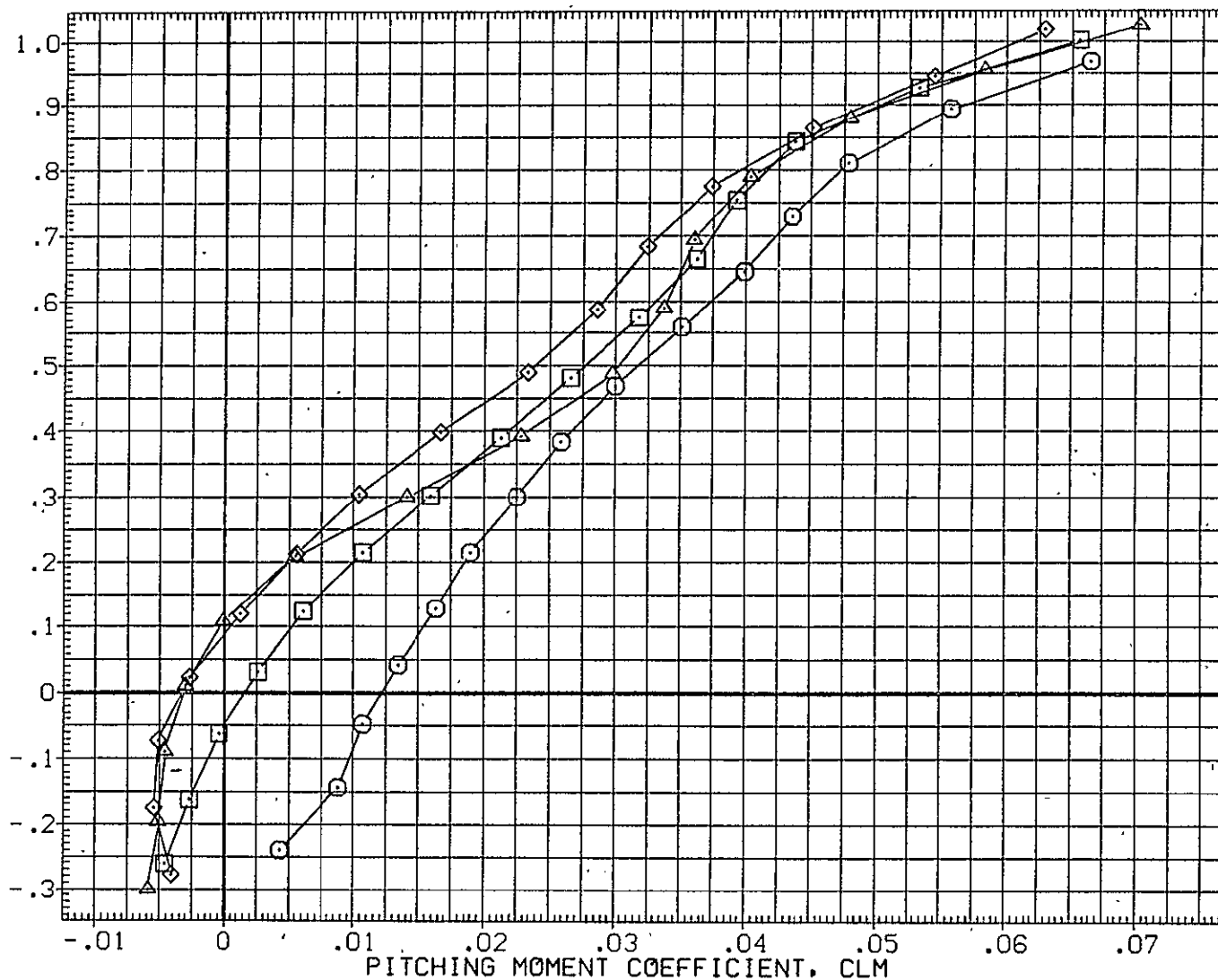


FIG. 68 747+0RB(8 DEG)+STD SPD BRK, FLAPS UP LAUNCH, HOR OFF, TAIL CONE OFF TOTAL

SYMBOL	MACH	BETA	PARAMETRIC VALUES
○	.300		.000 RUD-U .000
□	.500	RUD-L	.000 S1-2 .000
◇	.600	S3-4	45.000 S5-6 20.000
△	.700	IORB	7.850

REFERENCE INFORMATION

SREF	5500.0000	SQ.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

CARRIER FRL ANGLE OF ATTACK, ALPHAW, DEG.

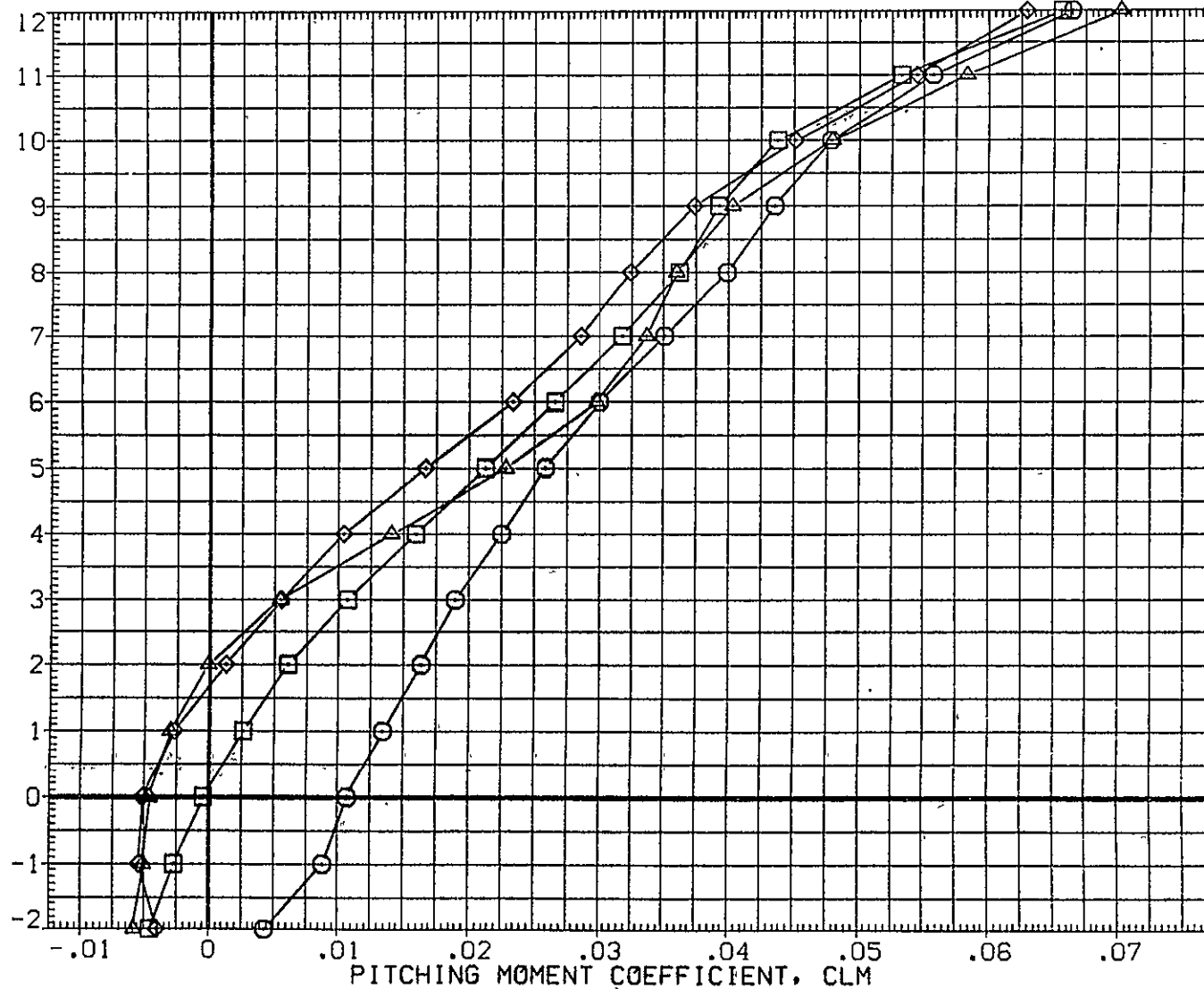


FIG. 68 747+0RB(8 DEG)+STD SPD BRK, FLAPS UP LAUNCH, HOR OFF, TAIL CONE OFF TOTAL

V9.1 MINUS ORB NOZ AT38.2A (BGM099)

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.750C	IN. ZC
SCALE	.0300	

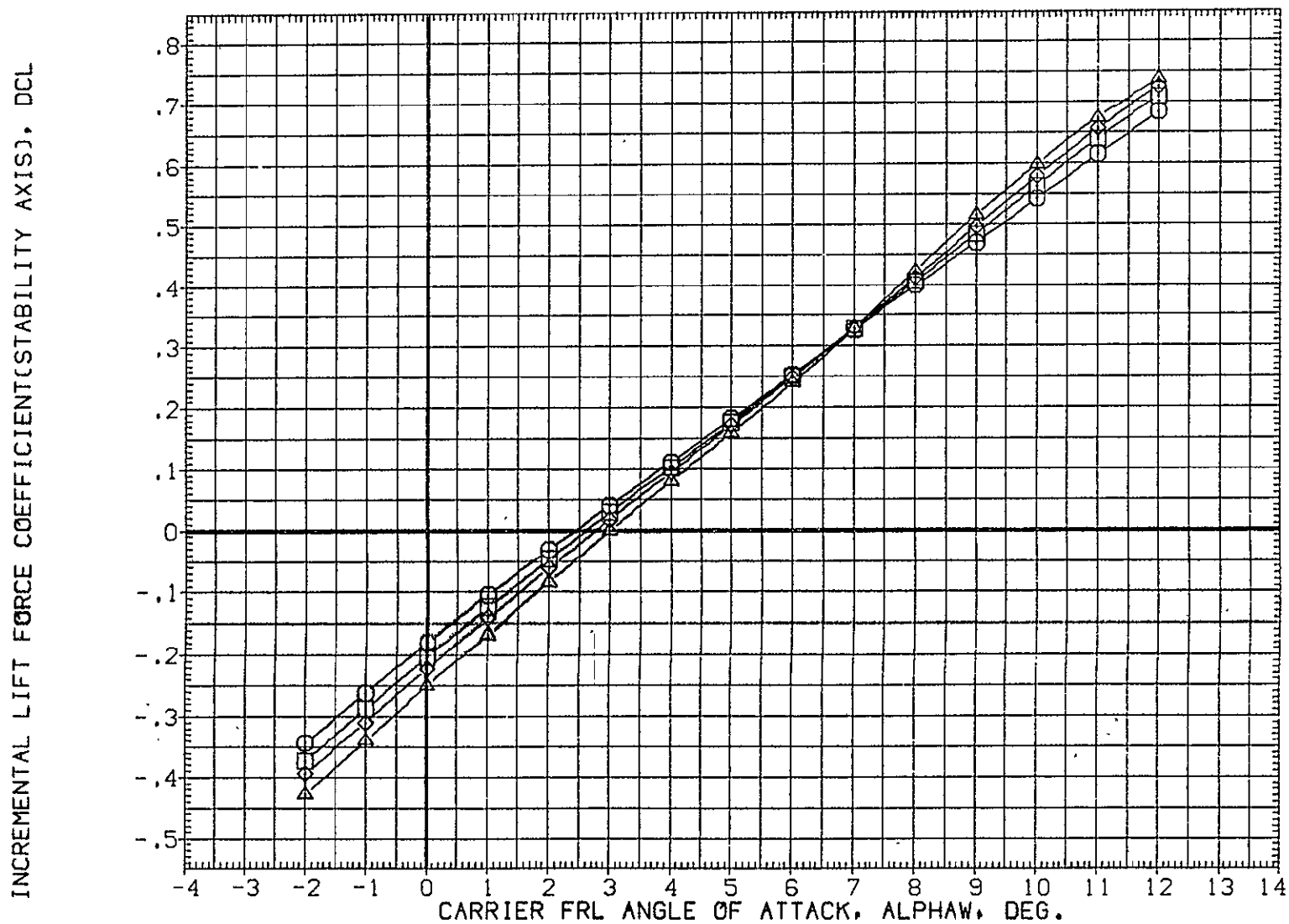


FIG. 69 747+0RB(8 DEG)+STD SPD BRK, FLAPS UP LAUNCH, HOR OFF, TAIL CONE OFF 747

SYMBOL	MACH	PARAMETRIC VALUES			
○	.300	BETA	.000	RUD-U	.000
□	.500	RUD-L	.000	S1-2	.000
◇	.600	S3-4	45.000	S5-6	20.000
△	.700	IORB	7.850		

REFERENCE INFORMATION

SREF	5500.0000	SQ.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

INCREMENTAL LIFT FORCE COEFFICIENT(STABILITY AXIS), DCL

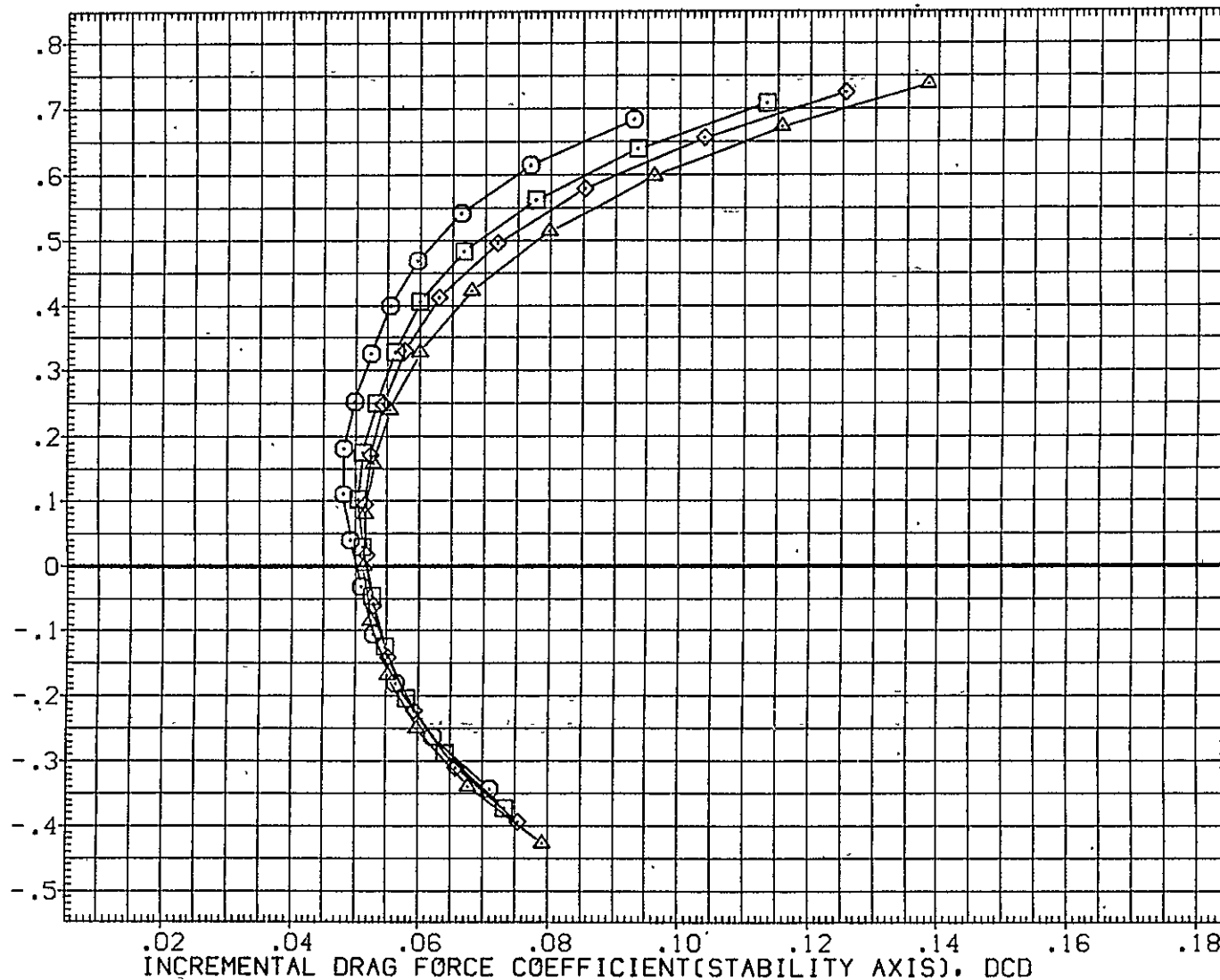


FIG. 69 747+ORB(8 DEG)+STD SPD BRK, FLAPS UP LAUNCH, HOR OFF, TAIL CONE OFF 747

CA5 K1 F0

V9.1 MINUS ORB N0Z AT38.2A (BGM099)

SYMBOL	MACH	BETA	PARAMETRIC VALUES		
○	.300	BETA	.000	RUD-U	.000
□	.500	RUD-L	.000	SI-2	.000
◇	.600	S3-4	45.000	S5-6	20.000
△	.700	IORB	7.850		

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

INCREMENTAL LIFT FORCE COEFFICIENT(STABILITY AXIS), DCL

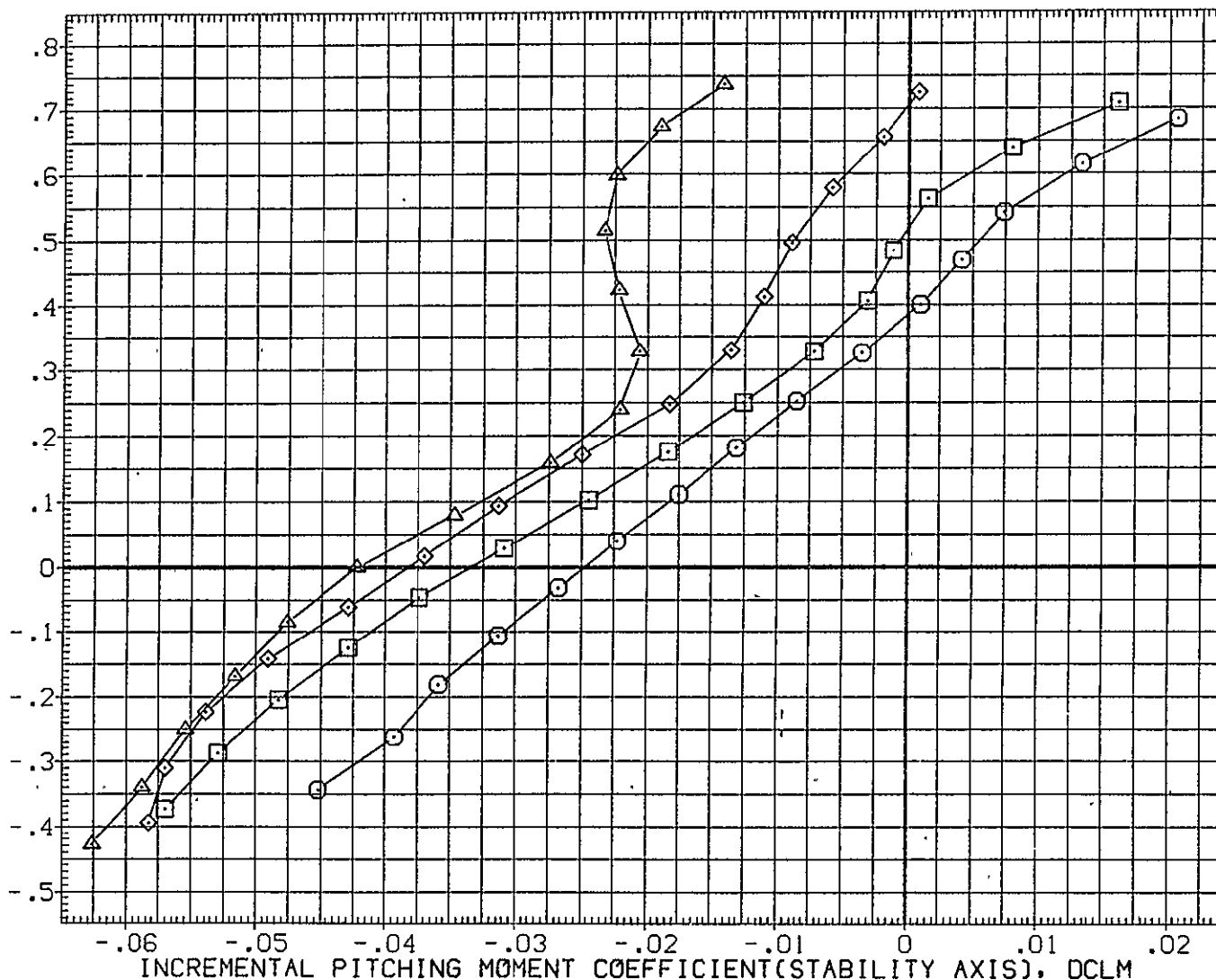


FIG. 69 747+ORB(8 DEG)+STD SPD BRK, FLAPS UP LAUNCH, HOR OFF, TAIL CONE OFF 747

SYMBOL	MACH	BETA	PARAMETRIC VALUES	RUD-U	
○	.300		.000	.000	
□	.500	RUD-L	.000	.000	
◇	.600	S3-4	45.000	S5-6	20.000
△	.700	IORB	7.850		

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

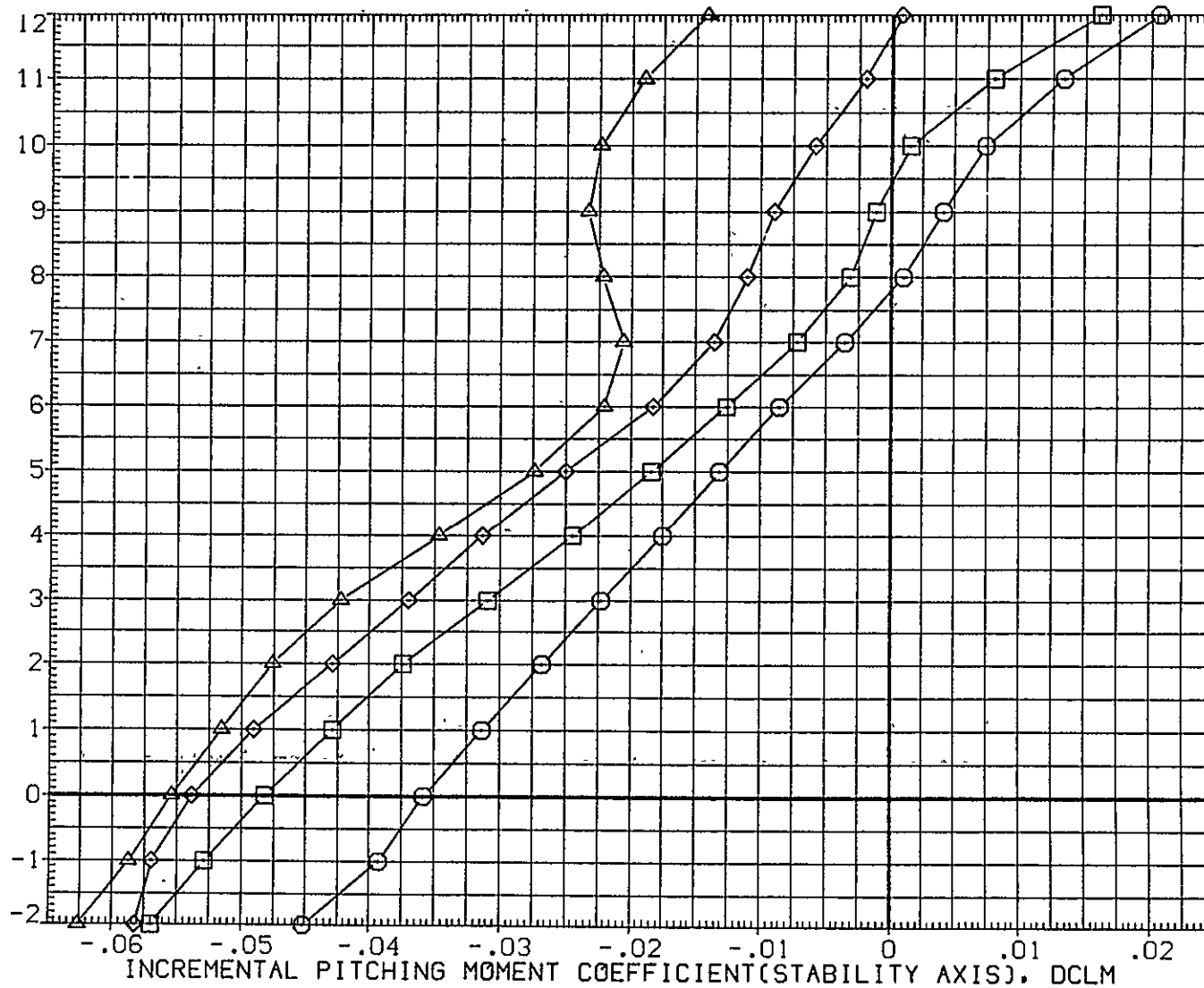
CARRIER FRL ANGLE OF ATTACK, ALPHA_W, DEG.

FIG. 69 747+ORB(8 DEG)+STD SPD BRK, FLAPS UP LAUNCH, HOR OFF, TAIL CONE OFF 747

CAS ORB NOZ AT38.2A (PRES. K1 FO

V9.1.) (YGM099)

SYMBOL	MACH	BETA	PARAMETRIC VALUES			
○	.301		.000	RUD-U	.000	
□	.500		.000	S1-2	.000	
◇	.599	S3-4	45.000	S5-6	20.000	
△	.701	10RB	7.850			

REFERENCE INFORMATION		
SREF	2630.0000	50.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN. X0
YMRP	.0000	IN. Y0
ZMRP	375.0000	IN. Z0
SCALE	.0300	

LIFT COEFFICIENT, CL

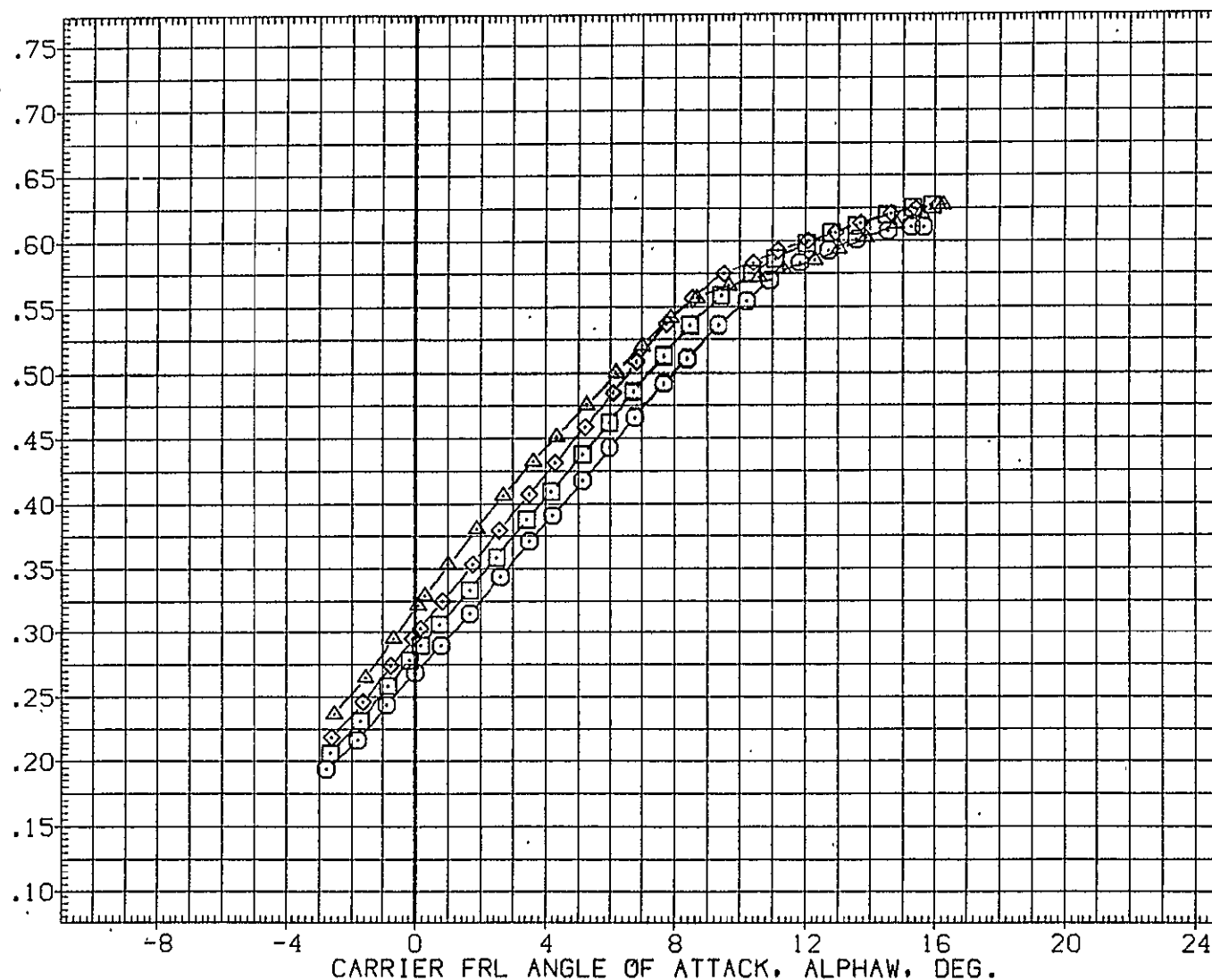


FIG. 70 747+ORB(8 DEG)+STD SPD BRK, FLAPS UP LAUNCH, HOR OFF, TAIL CONE OFF ORB

SYMBOL	MACH	BETA	PARAMETRIC VALUES		
○	.301		.000	RUD-U	.000
□	.500		.000	S1-2	.000
◇	.599	S3-4	45.000	S5-6	20.000
△	.701	I0RB	7.850		

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN. X0
YMRP	.0000	IN. Y0
ZMRP	375.0000	IN. Z0
SCALE	.0300	

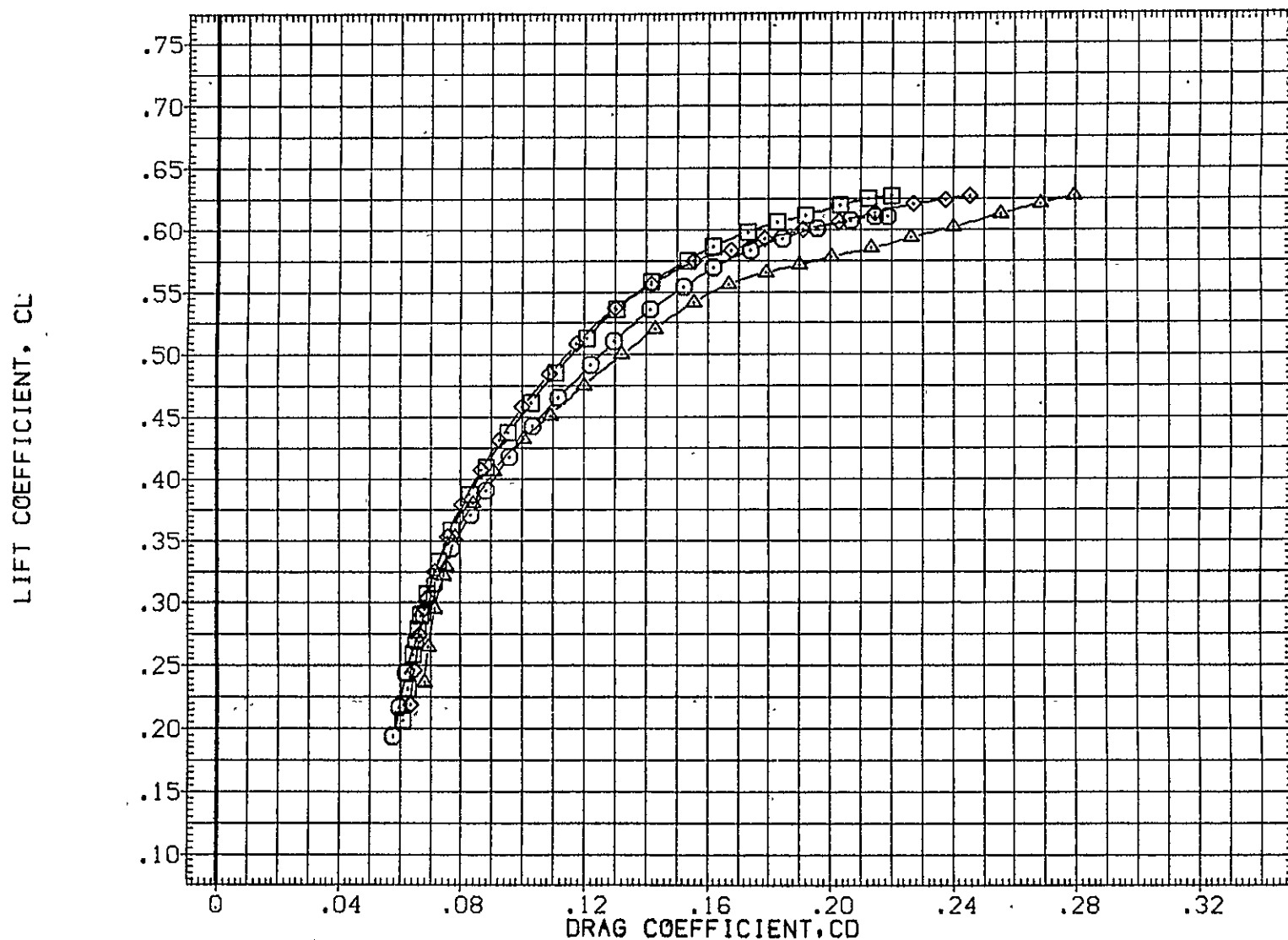


FIG. 70 747+ORB(8 DEG)+STD SPD BRK, FLAPS UP LAUNCH, HOR OFF, TAIL CONE OFF ORB

CA5 ORB NOZ AT38.2A (PRES. K1 FO

V9.1)(YGM099)

SYMBOL

MACH

PARAMETRIC VALUES

○

.301

BETA

.000

RUD-U

.000

□

.500

RUD-L

.000

S1-2

.000

◇

.599

S3-4

45.000

S5-6

20.000

△

.701

IORB

7.850

REFERENCE INFORMATION

SREF 2690.0000 SQ.FT.

LREF 474.8100 IN.

BREF 936.6800 IN.

XMRP 1109.0000 IN. X0

YMRP .0000 IN. Y0

ZMRP 375.0000 IN. Z0

SCALE .0300

LIFT COEFFICIENT, CL

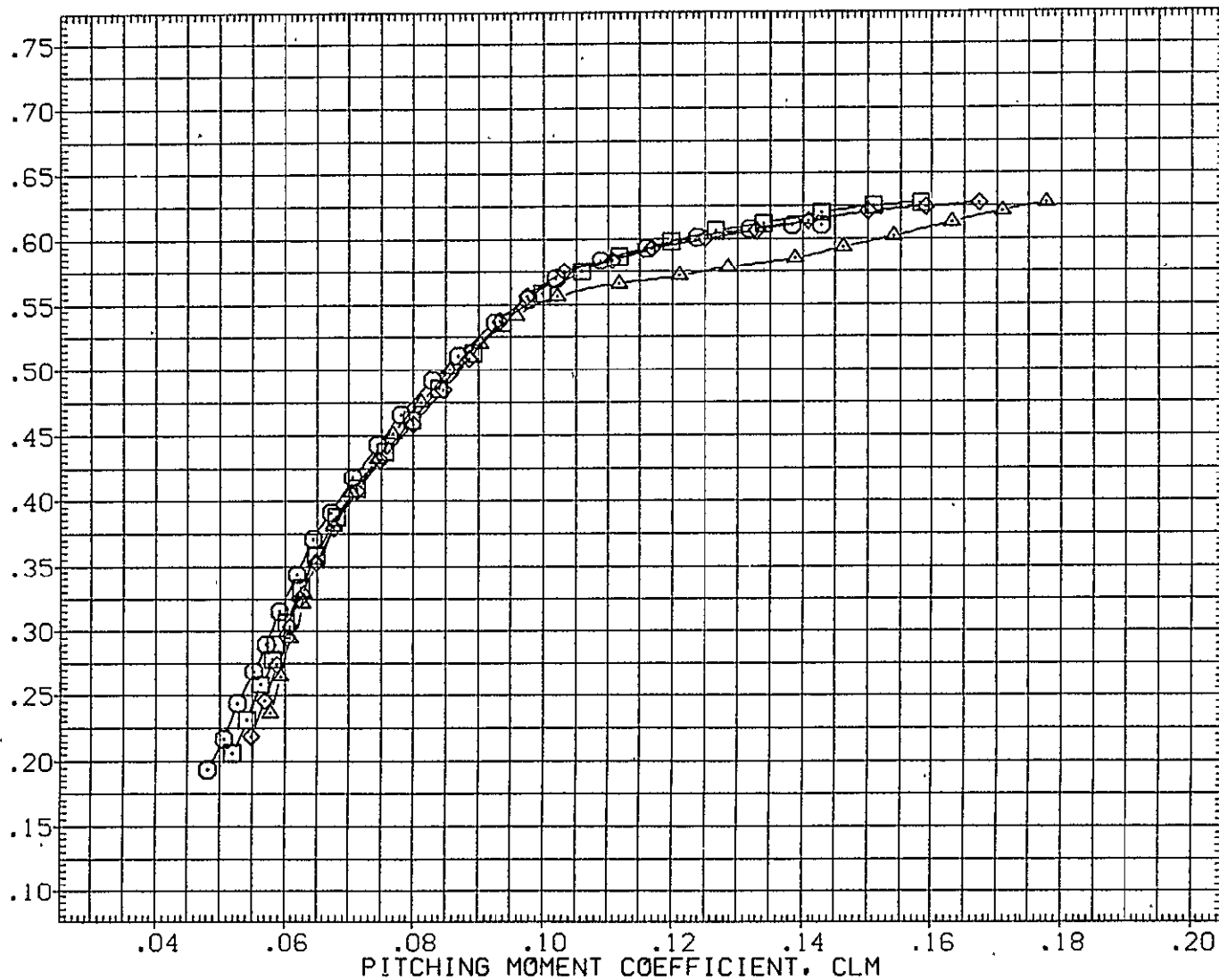


FIG. 70 747+ORB(8 DEG)+STD SPD BRK, FLAPS UP LAUNCH, HOR OFF, TAIL CONE OFF ORB

SYMBOL	MACH	PARAMETRIC VALUES			
○	.301	BETA	.000	RUD-U	.000
□	.500	RUD-L	.000	S1-2	.000
◇	.599	S3-4	45.000	S5-6	20.000
△	.701	IORB	7.850		

REFERENCE INFORMATION		
SREF	2690.0000	SO.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN. X0
YMRP	.0000	IN. Y0
ZMRP	375.0000	IN. Z0
SCALE	.0300	

CARRIER FRL ANGLE OF ATTACK, ALPHA, DEG.

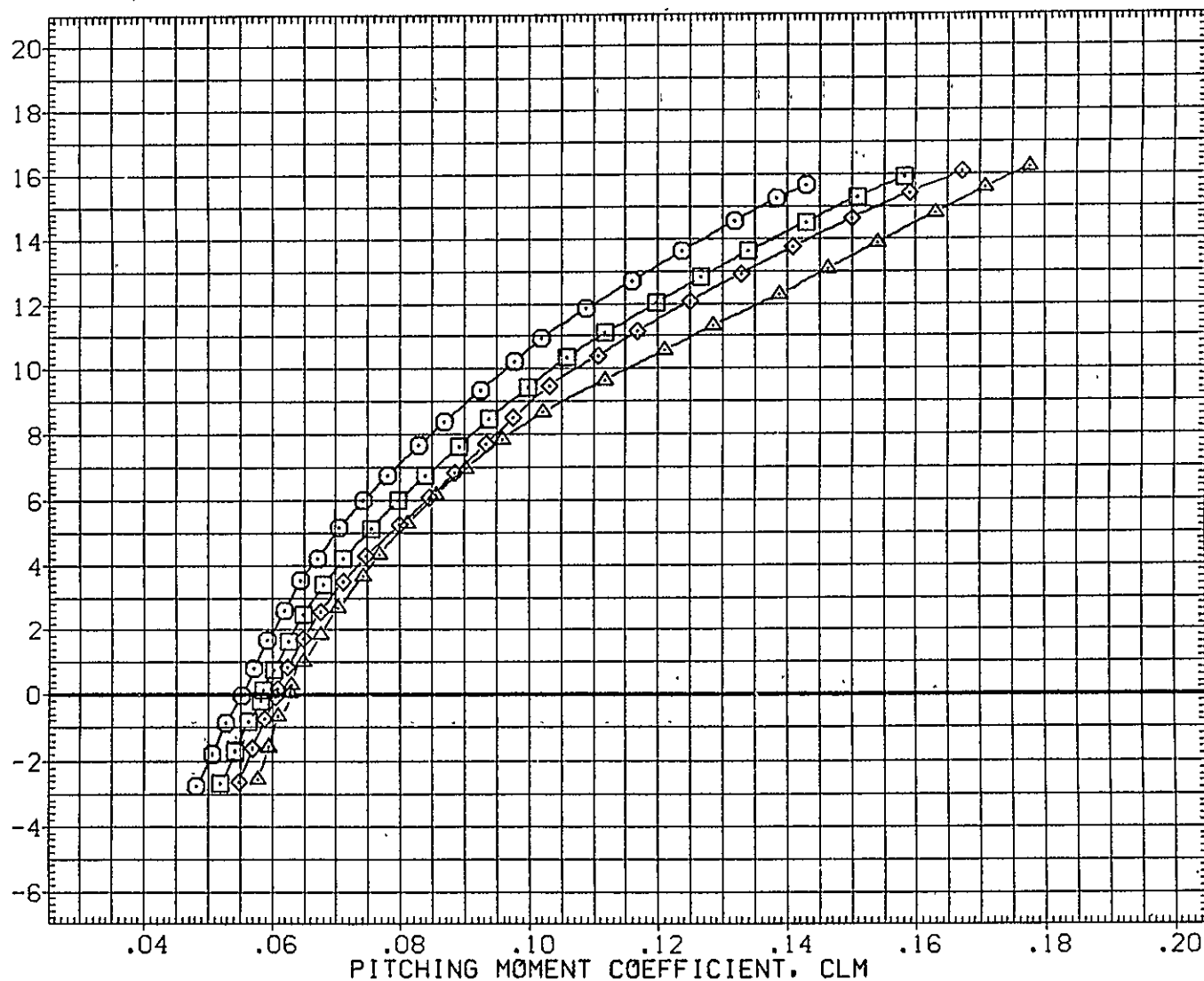


FIG. 70 747+ORB(8 DEG)+STD SPD BRK, FLAPS UP LAUNCH, HOR OFF, TAIL CONE OFF ORB.

CA5 K1 F0		V9.1 (PLUS. 0RB TC5 AT38.3)(RGM107)				REFERENCE INFORMATION	
SYMBOL	MACH	PARAMETRIC VALUES				SREF	5500.0000 SQ.FT.
○	.150	BETA	.000	RUD-U	.000	LREF	327.8000 IN.
□	.300	RUD-L	.000	S1-2	.000	BREF	2348.0000 IN.
◇	.500	S3-4	.000	S5-6	.000	XMRP	1339.9100 IN. XC
△	.600	IORB	4.000			YMRP	.0000 IN. YC
▽	.700					ZMRP	190.7500 IN. ZC
						SCALE	.0300

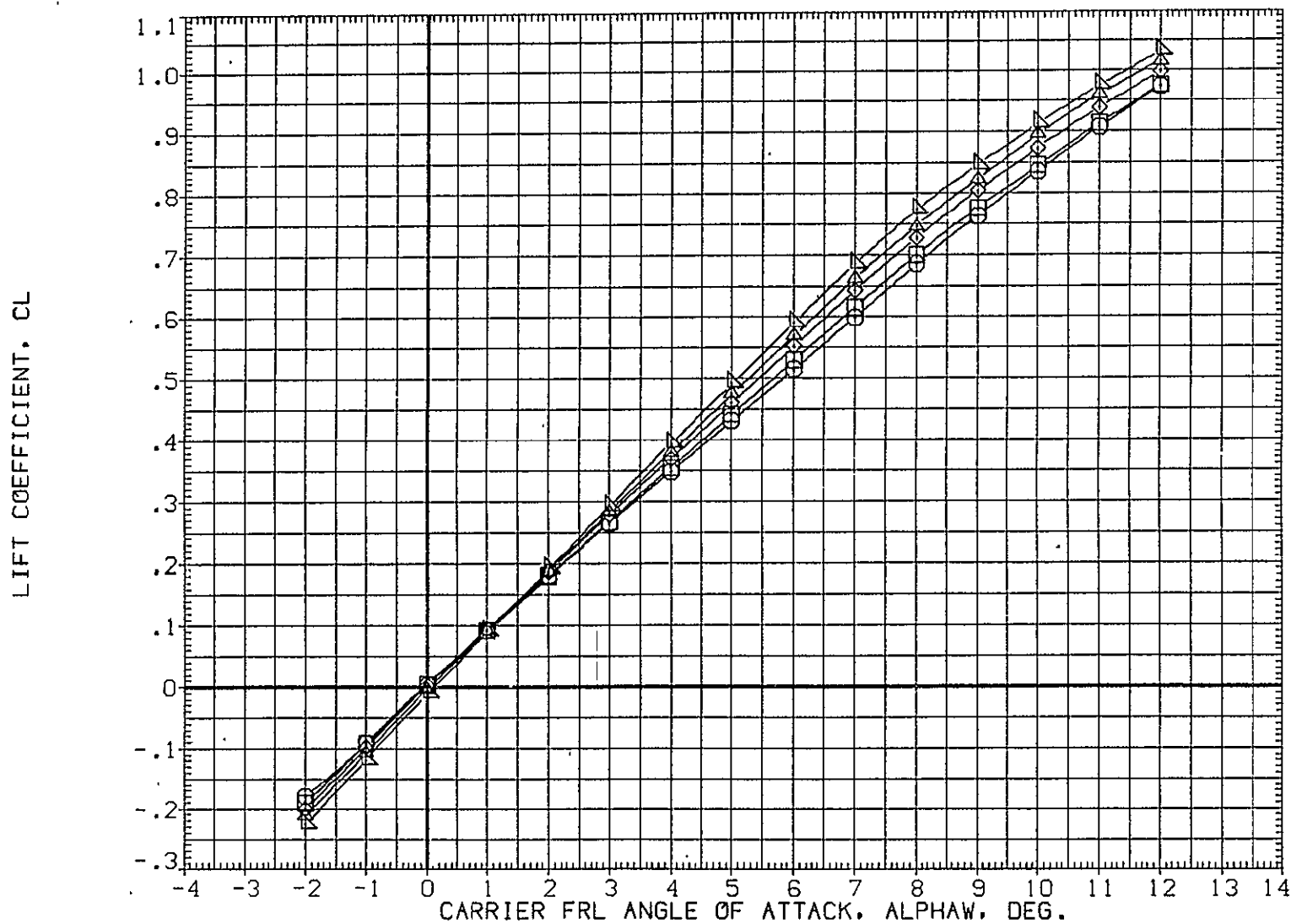


FIG. 71 747+0RB(4 DEG), HORIZ OFF, FLAPS UP FERRY

SYMBOL

○
□
◇
△
▽

MACH

.150
.300
.500
.600
.700

PARAMETRIC VALUES

BETA .000 RUD-U .000
RUD-L .000 S1-2 .000
S3-4 .000 S5-6 .000
IORB 4.000

REFERENCE INFORMATION

SREF 5500.0000 SQ.FT.
LREF 327.8000 IN.
BREF 2348.0000 IN.
XMRP 1339.9100 IN. XC
YMRP .0000 IN. YC
ZMRP 190.7500 IN. ZC
SCALE .0300

LIFT COEFFICIENT, CL

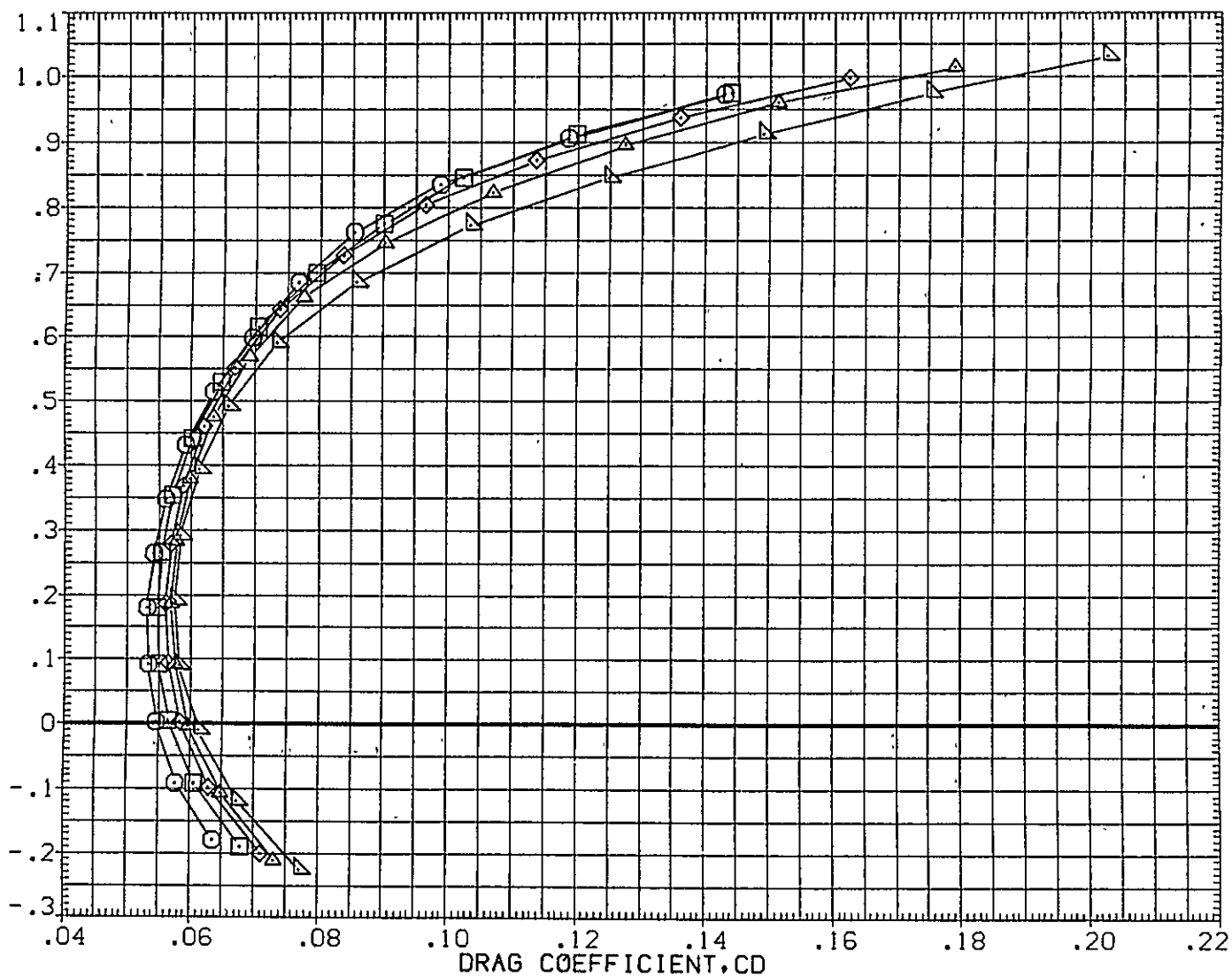


FIG. 71 747+ORB(4 DEG), HORIZ OFF, FLAPS UP FERRY

TOTAL

PAGE 282

CA5 K1 F0

V9.1 (PLUS. ORB TC5 AT38.3)(RGM107)

SYMBOL
 ○
 □
 ◇
 △
 ▽

MACH
 .150
 .300
 .500
 .600
 .700

PARAMETRIC VALUES

BETA	.000	RUD-U	.000
RUD-L	.000	S1-2	.000
S3-4	.000	S5-6	.000
10RB	4.000		

REFERENCE INFORMATION

SREF	5500.0000	SQ.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

LIFT COEFFICIENT, CL

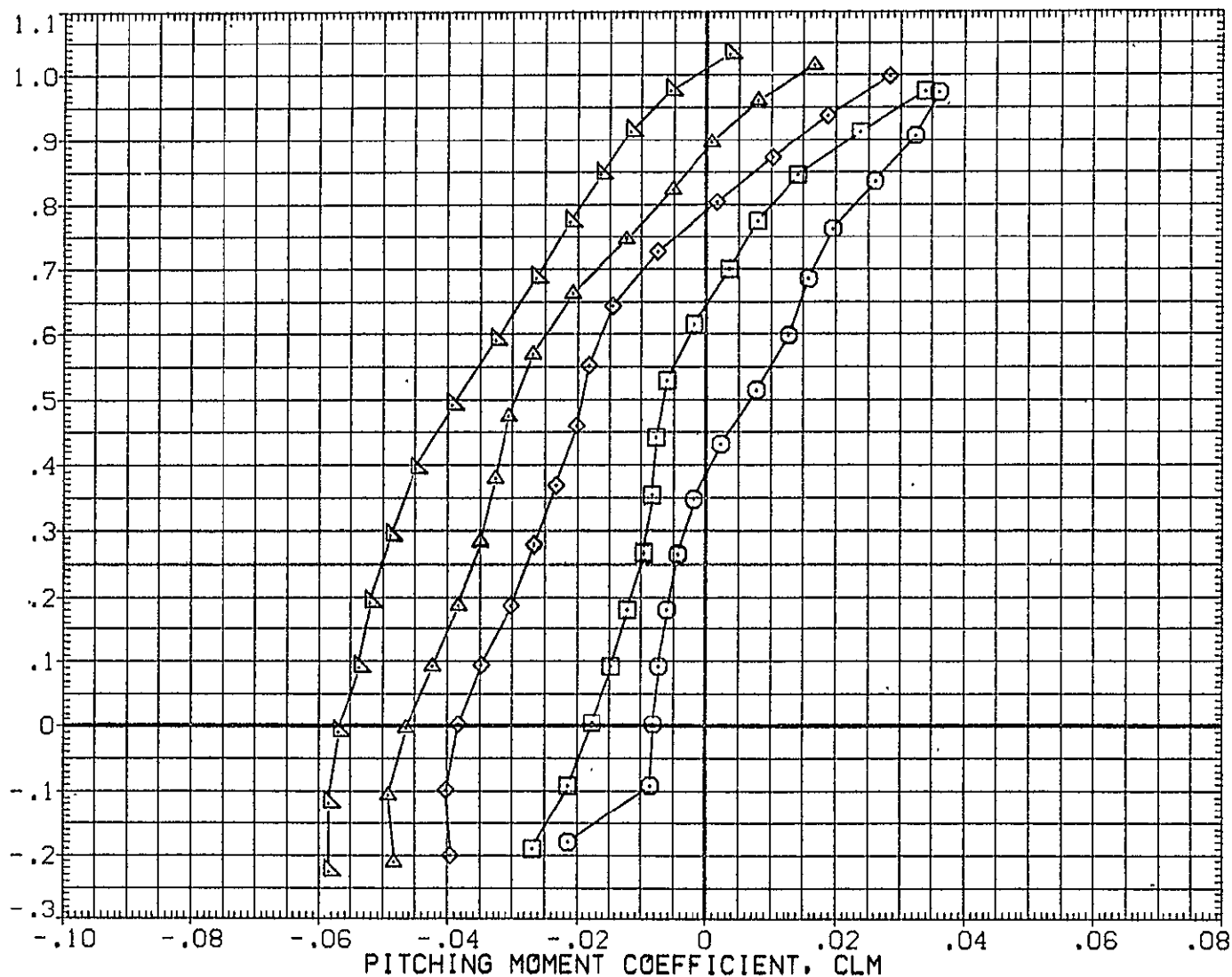


FIG. 71 747+ORB(4 DEG), HORIZ OFF, FLAPS UP FERRY

TOTAL

SYMBOL
 ○
 ◇
 □
 △

MACH

.150
 .300
 .500
 .600
 .700

BETA
 RUD-L
 S3-4
 10RB

PARAMETRIC VALUES

.000 RUD-U .000
 .000 S1-2 .000
 .000 S5-6 .000
 4.000

REFERENCE INFORMATION

SREF 5500.0000 SQ.FT.
 LREF 327.8000 IN.
 BREF 2348.0000 IN.
 XMRP 1339.9100 IN. XC
 YMRP .0000 IN. YC
 ZMRP 190.7500 IN. ZC
 SCALE .0300

CARRIER FRL ANGLE OF ATTACK, ALPHA, DEG.

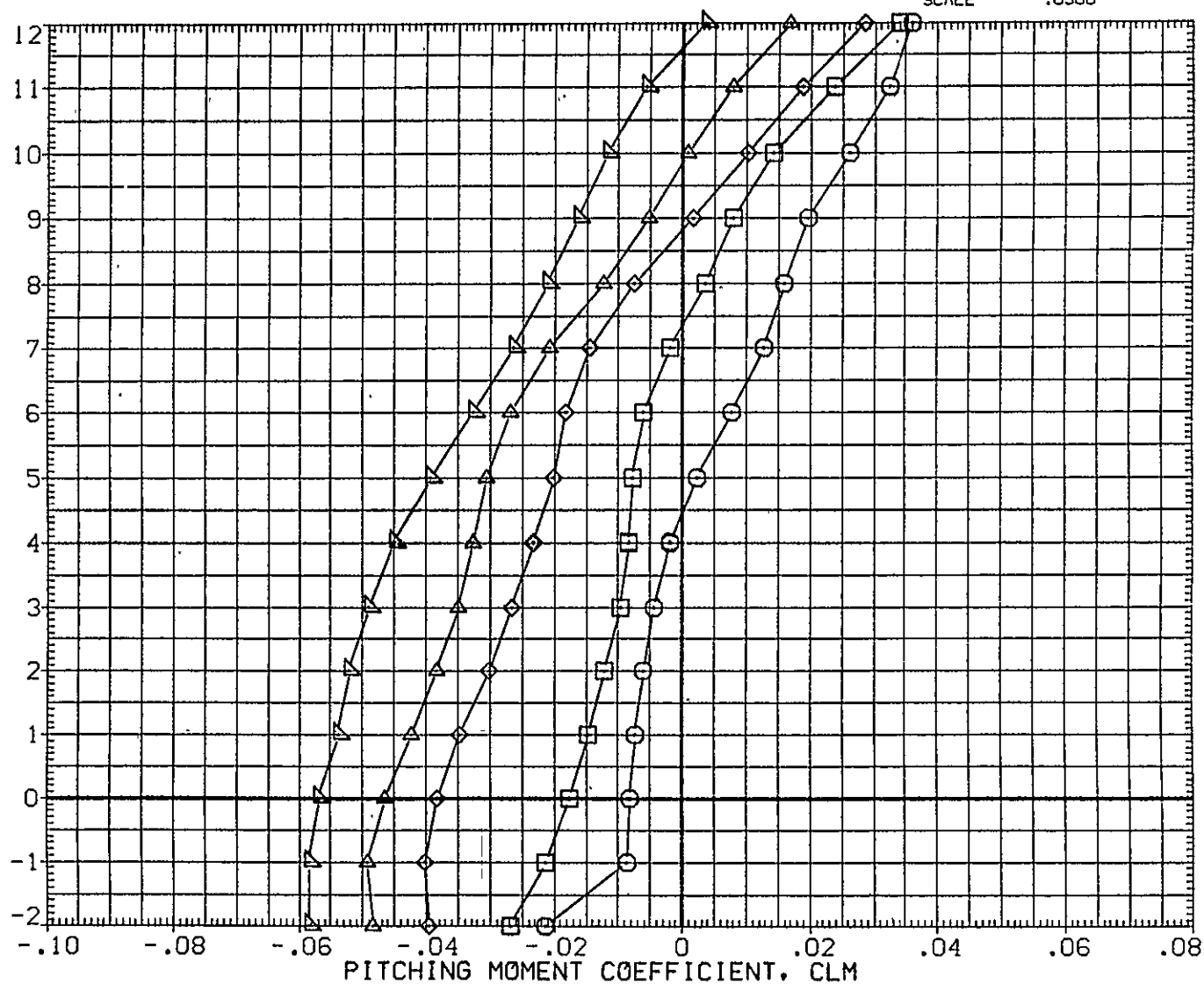


FIG. 71 747+ORB(4 DEG), HORIZ OFF, FLAPS UP FERRY

TOTAL

PAGE 284

CA5 K1 FO

V9.1 MINUS ORB TC5 AT38.3 (BGM107)

SYMBOL	MACH	BETA	PARAMETRIC VALUES
○	.150		RUD-U .000
□	.300	RUD-L	S1-2 .000
◇	.500	S3-4	S5-6 .000
△	.600	IORB	4.000
▽	.700		

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

INCREMENTAL LIFT FORCE COEFFICIENT(STABILITY AXIS), DCL

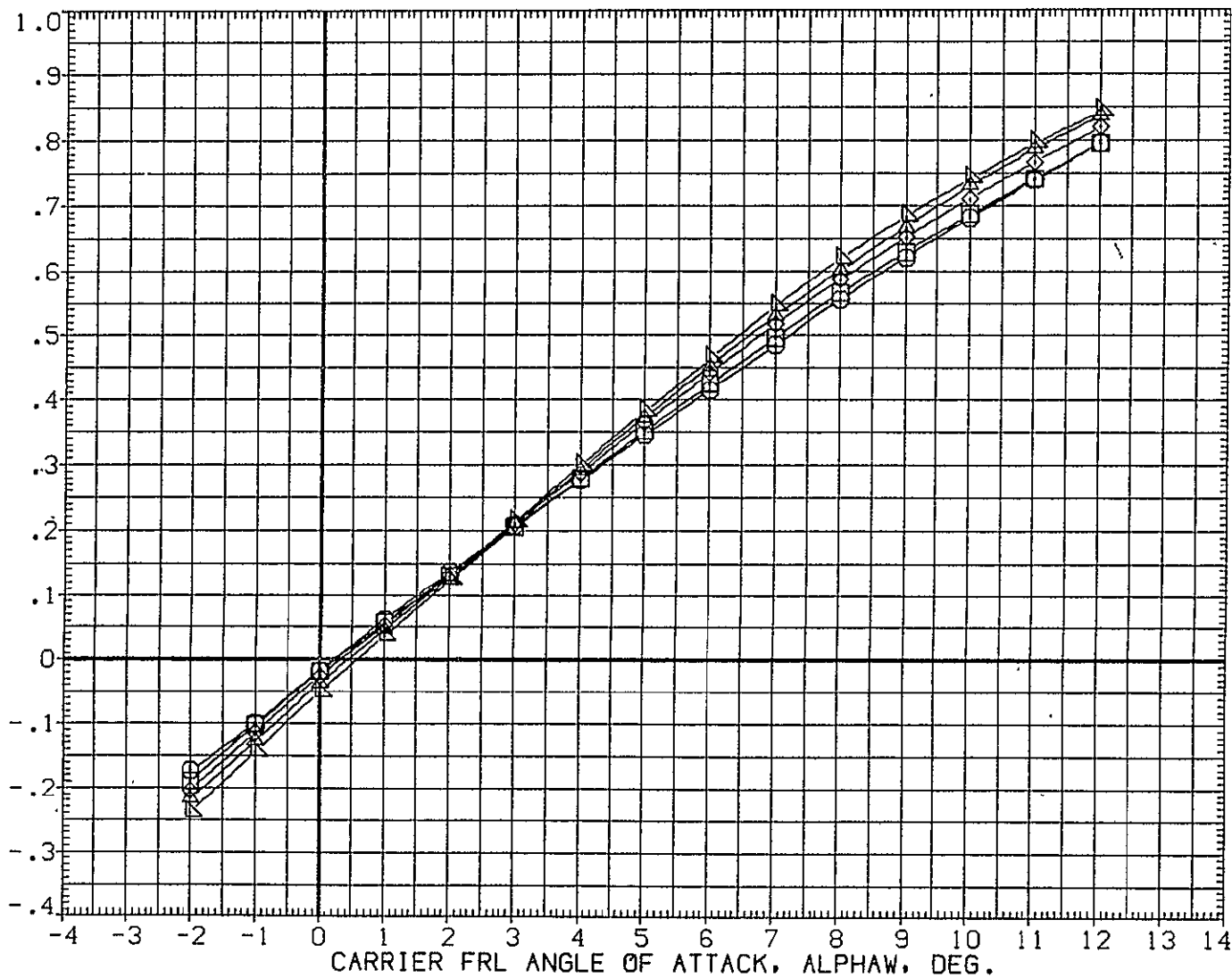


FIG. 72 747+ORB(4 DEG), HORIZ OFF, FLAPS UP FERRY

747

SYMBOL

MACH

PARAMETRIC VALUES

REFERENCE INFORMATION

○
□
◇
△
▽

.150
.300
.500
.600
.700

BETA
RUD-L
S3-4
ICRB

.000
.000
.000
4.000

RUD-U
S1-2
S5-6

.000
.000
.000

SREF 5500.0000
LREF 327.8000
BREF 2348.0000
XMRP 1339.9100
YMRP .0000
ZMRP 190.7500
SCALE .0300

SQ.FT.
IN.
IN.
IN. XC
IN. YC
IN. ZC

INCREMENTAL LIFT FORCE COEFFICIENT(STABILITY AXIS), DCL

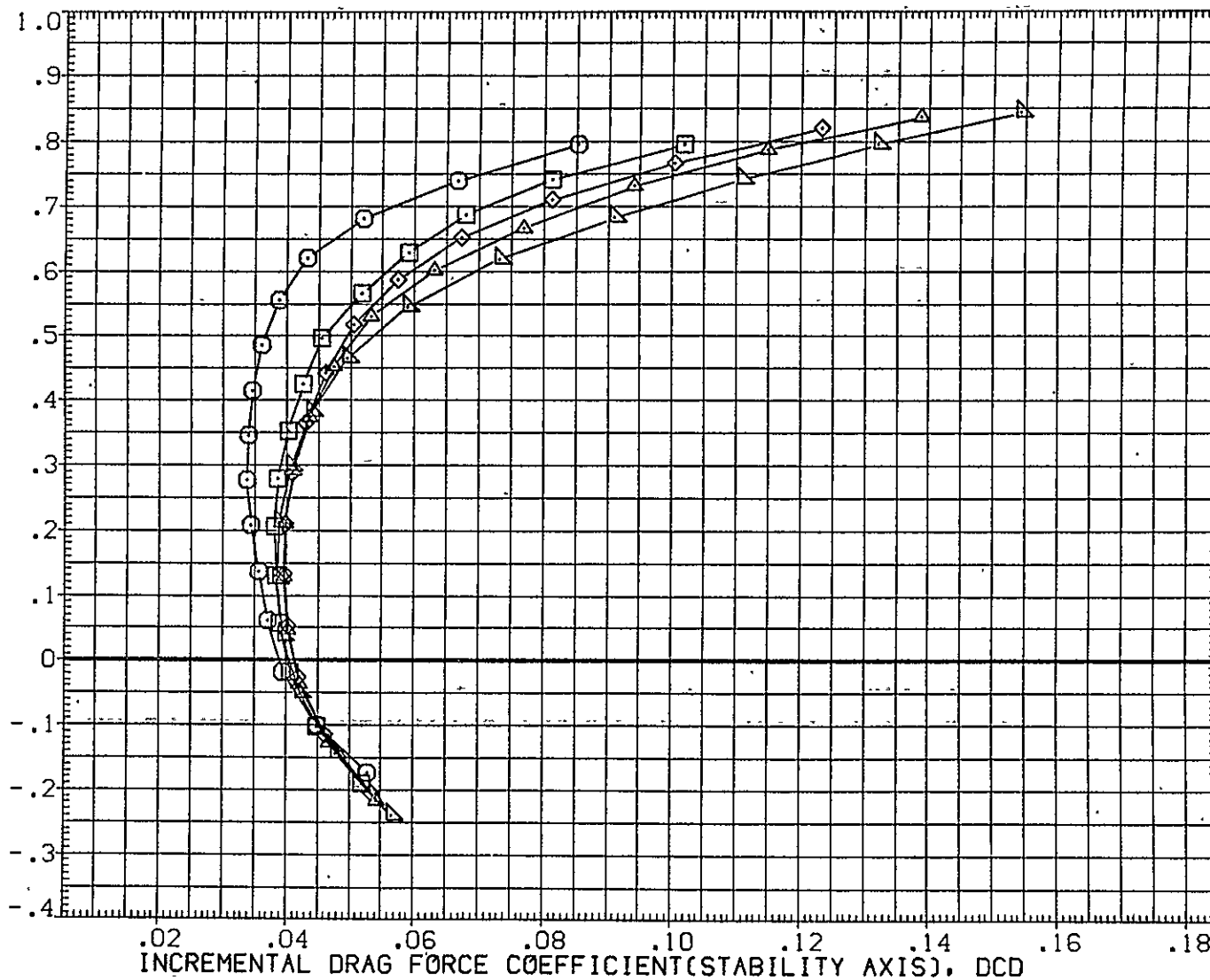


FIG. 72 747+ORB(4 DEG), HORIZ OFF, FLAPS UP FERRY

CA5 K1 F0

V9.1 MINUS 0RB TC5 AT38.3 (BGM107)

SYMBOL
 ○
 □
 ◇
 △
 ▽

MACH
 .150
 .300
 .500
 .600
 .700

BETA
 RUD-L
 S3-4
 10RB

PARAMETRIC VALUES
 .000 RUD-U
 .000 S1-2
 .000 S5-6
 4.000

.000
 .000
 .000

REFERENCE INFORMATION

SREF 5500.0000 SQ.FT.
 LREF 327.8000 IN.
 BREF 2348.0000 IN.
 XMRP 1339.9100 IN. XC
 YMRP .0000 IN. YC
 ZMRP 190.7500 IN. ZC
 SCALE .0300

INCREMENTAL LIFT FORCE COEFFICIENT(STABILITY AXIS), DCL

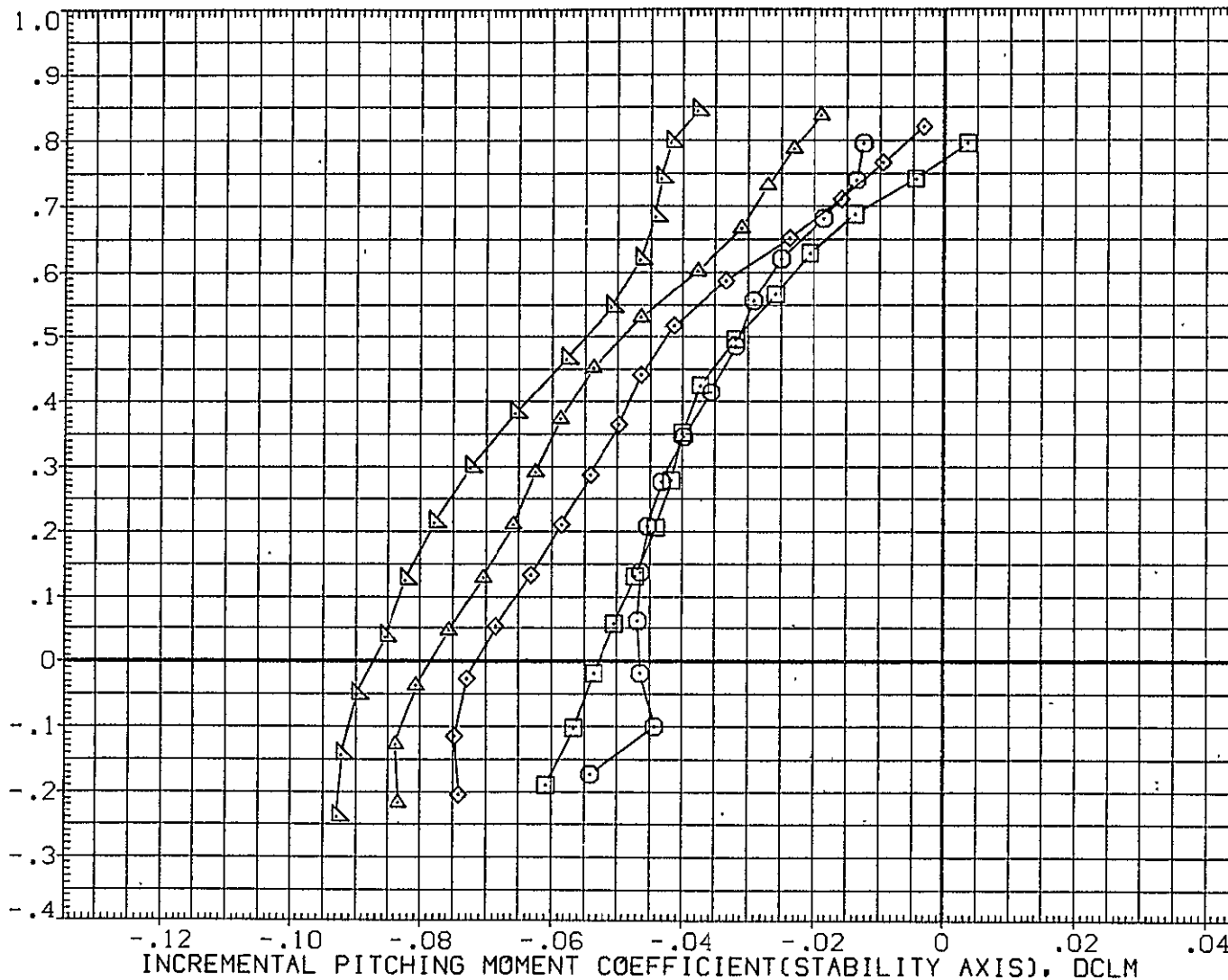


FIG. 72 747+0RB(4 DEG), HORIZ OFF, FLAPS UP FERRY

747

SYMBOL
 ○
 □
 ◇
 △
 ▽

MACH
 .150
 .300
 .500
 .600
 .700

BETA
 RUD-L
 S3-4
 10RB

PARAMETRIC VALUES
 .000
 .000
 .000
 4.000

RUD-U
 S1-2
 S5-6
 .000
 .000
 .000

REFERENCE INFORMATION

SREF 5500.0000 SQ.FT.
 LREF 327.8000 IN.
 BREF 2348.0000 IN.
 XMRP 1339.9100 IN. XC
 YMRP .0000 IN. YC
 ZMRP 190.7500 IN. ZC
 SCALE .0300

CARRIER FRL ANGLE OF ATTACK, ALPHAW, DEG.

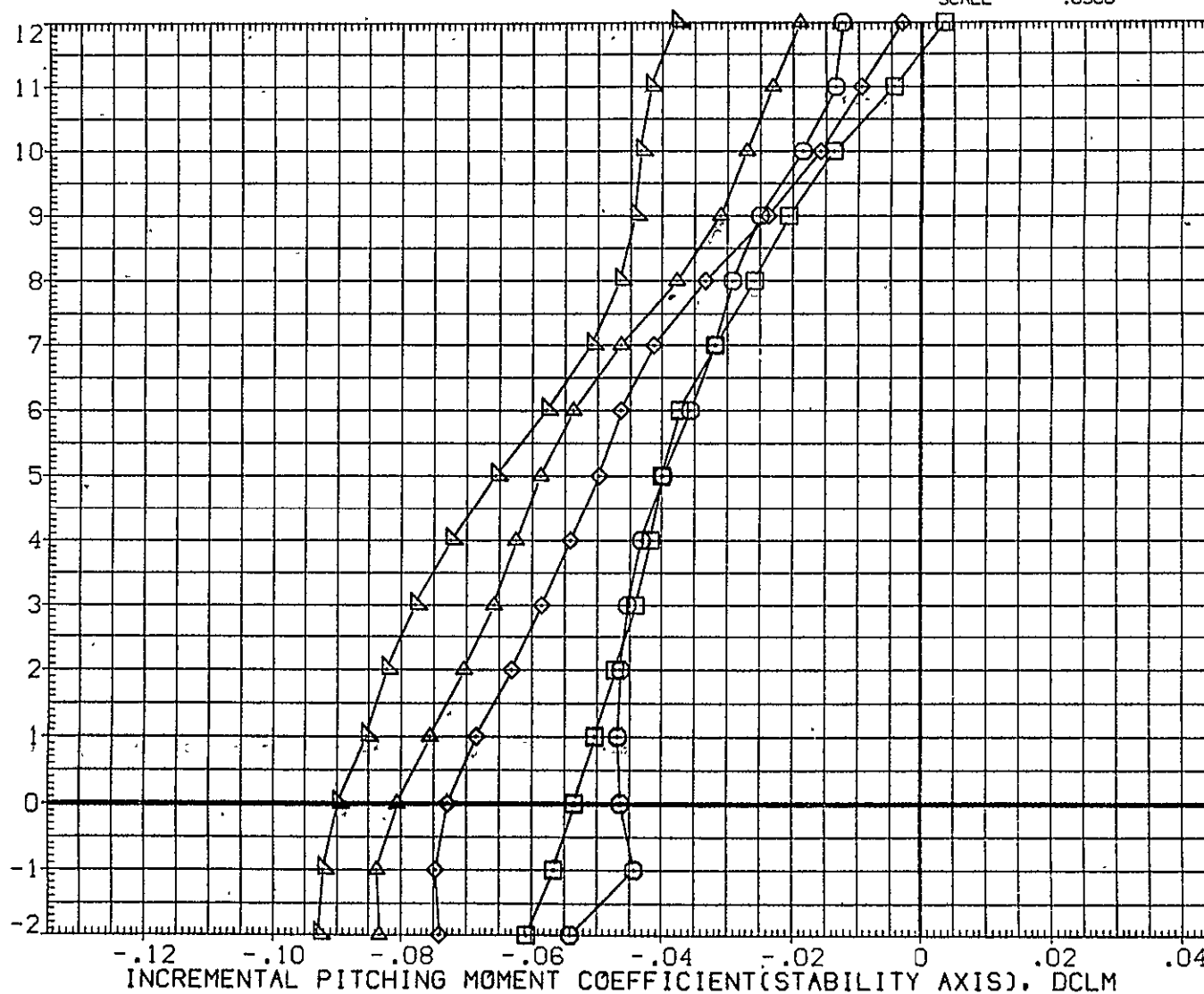


FIG. 72 747+ORB(4 DEG), HORIZ OFF, FLAPS UP FERRY

747

CA5 ORB TC5 AT38.3 (PRES. K1 FO

V9.1)(YGM107)

SYMBOL
 ○
 □
 ◇
 △
 ▽

MACH
 .150
 .300
 .500
 .600
 .700

BETA
 RUD-L
 S3-4
 TORB

PARAMETRIC VALUES

.000 RUD-U
 .000 S1-2
 .000 S5-6
 4.000

REFERENCE INFORMATION

SREF 2690.0000 SQ.FT.
 LREF 474.8100 IN.
 BREF 936.6800 IN.
 XMRP 1109.0000 IN. X0
 YMRP .0000 IN. Y0
 ZMRP 375.0000 IN. Z0
 SCALE .0300

LIFT COEFFICIENT, CL

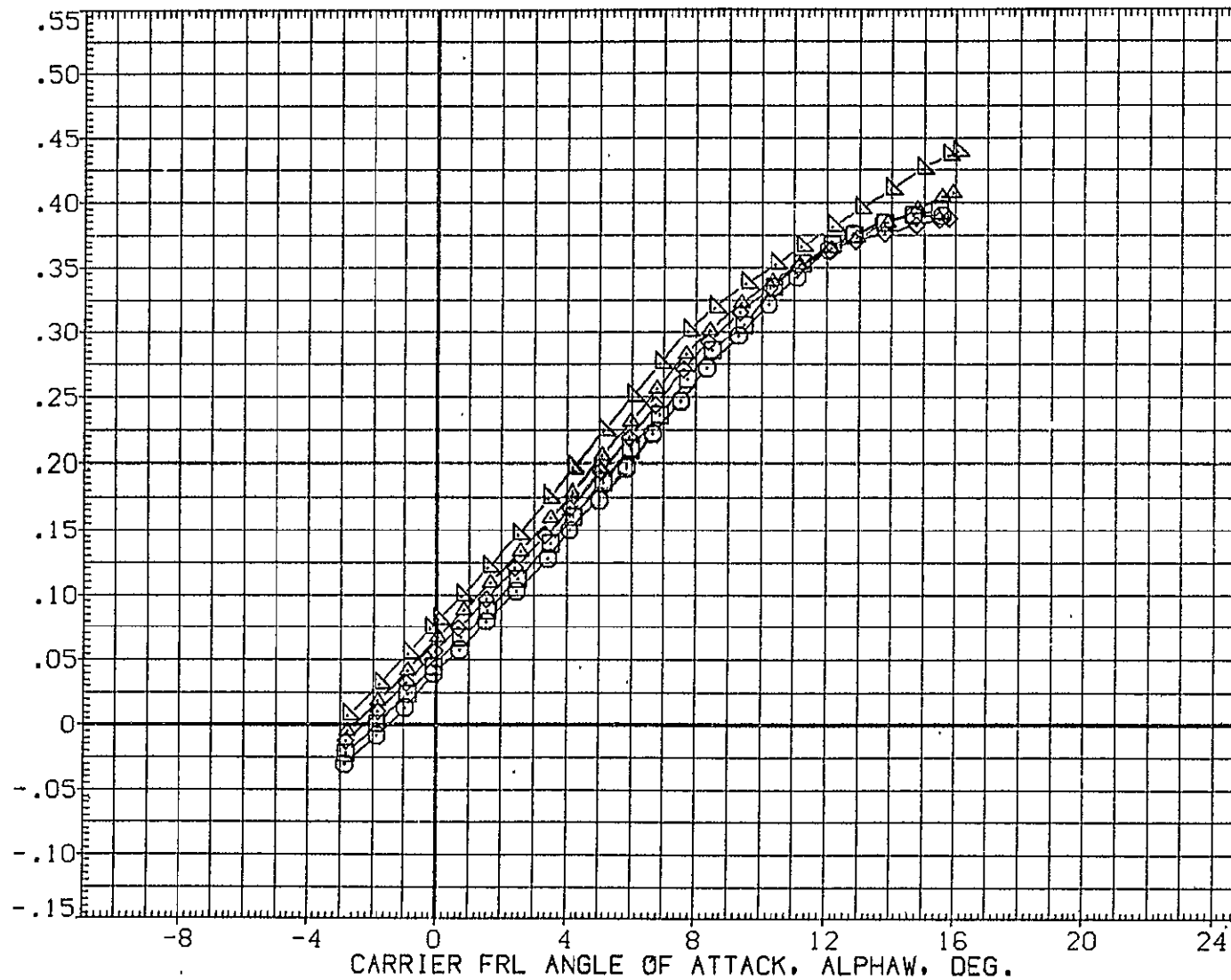


FIG. 73 747+ORB(4 DEG), HORIZ OFF, FLAPS UP FERRY

ORB

SYMBOL	MACH	PARAMETRIC VALUES			
○	.150	BETA	.000	RUD-U	.000
□	.300	RUD-L	.000	SI-2	.000
◇	.500	S3-4	.000	S5-6	.000
△	.600	IORB	4.000		
▽	.700				

REFERENCE INFORMATION		
SREF	2690.0000	SQ. FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN. X0
YMRP	.0000	IN. Y0
ZMRP	375.0000	IN. Z0
SCALE	.0300	

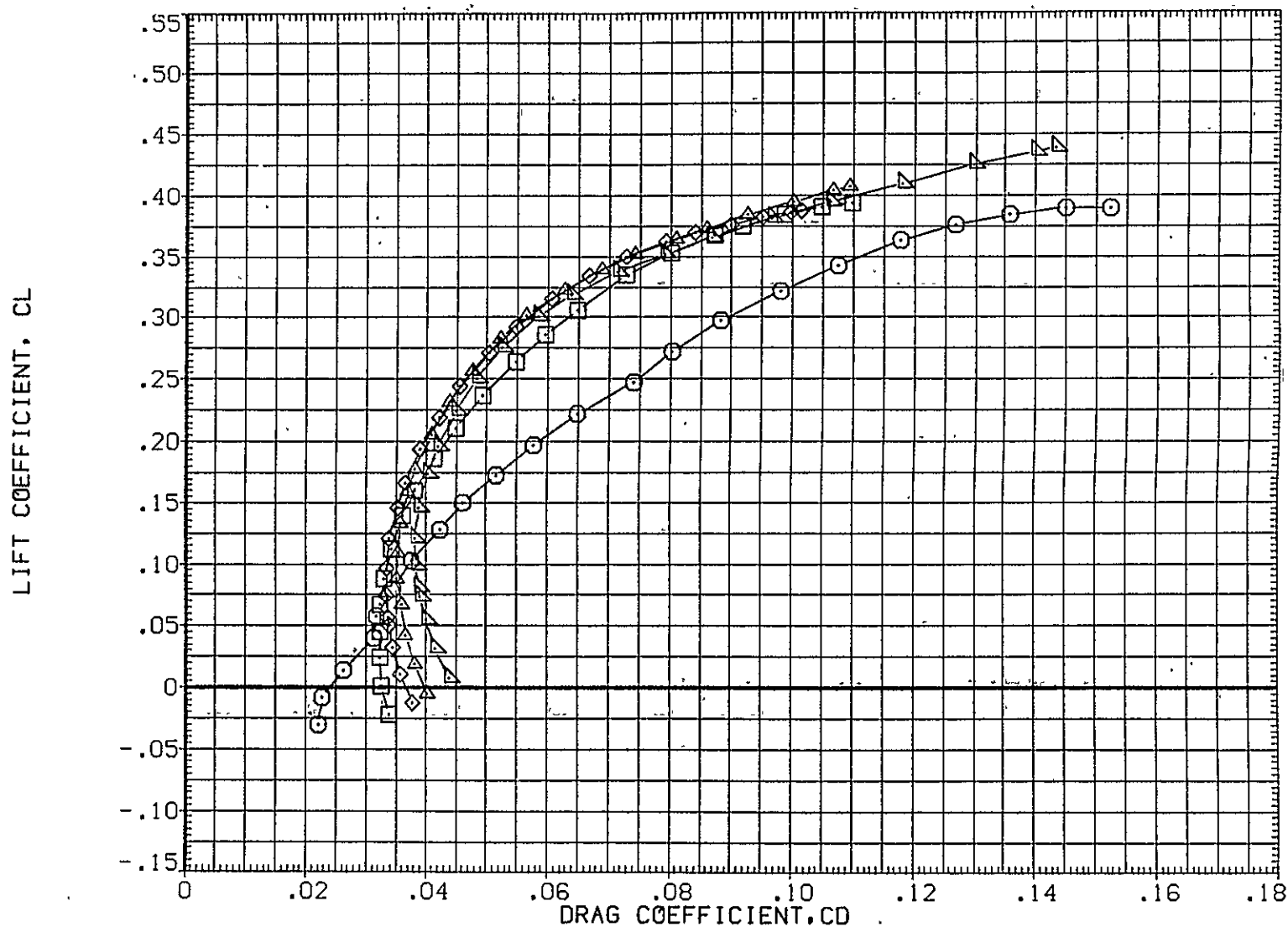


FIG. 73 747+ORB(4 DEG), HORIZ OFF, FLAPS UP FERRY

ORB

CA5 ORB TC5 AT38.3 (PRES. K1 FO

V9.1)(YGM107)

SYMBOL	MACH	PARAMETRIC VALUES			
○	.150	BETA	.000	RUD-U	.000
□	.300	RUD-L	.000	S1-2	.000
◇	.500	S3-4	.000	S5-6	.000
△	.600	ICRB	4.000		
▽	.700				

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN. X0
YMRP	.0000	IN. Y0
ZMRP	375.0000	IN. Z0
SCALE	.0300	

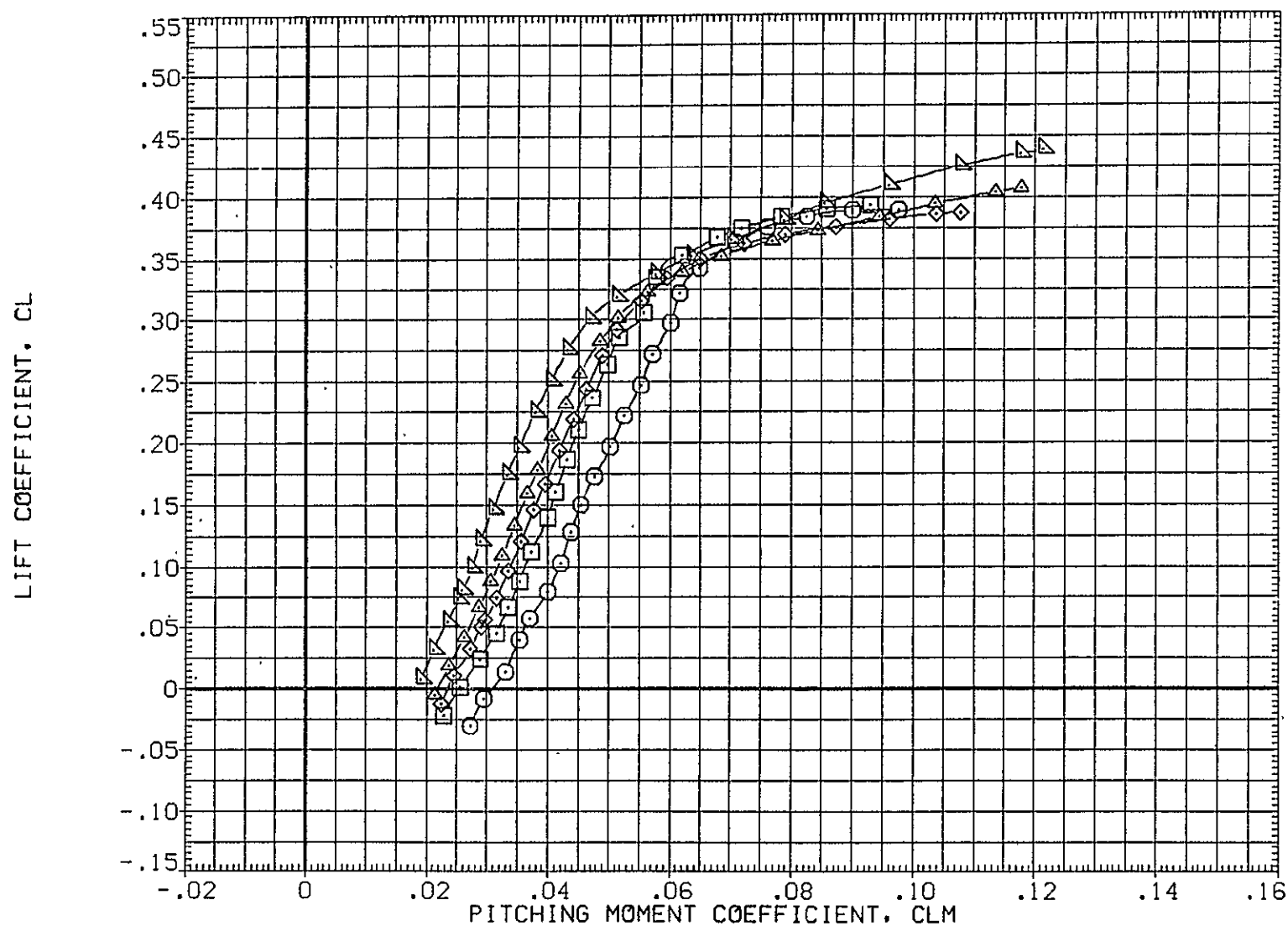


FIG. 73 747+ORB(4 DEG), HORIZ OFF, FLAPS UP FERRY

ORB

SYMBOL	MACH	PARAMETRIC VALUES			
○	.150	BETA	.000	RUD-U	.000
□	.300	RUD-L	.000	S1-2	.000
◇	.500	S3-4	.000	S5-6	.000
△	.600	IORB	4.000		
▽	.700				

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN. X0
YMRP	.0000	IN. Y0
ZMRP	375.0000	IN. Z0
SCALE	.0300	

CARRIER FRL ANGLE OF ATTACK, ALPHA, DEG.

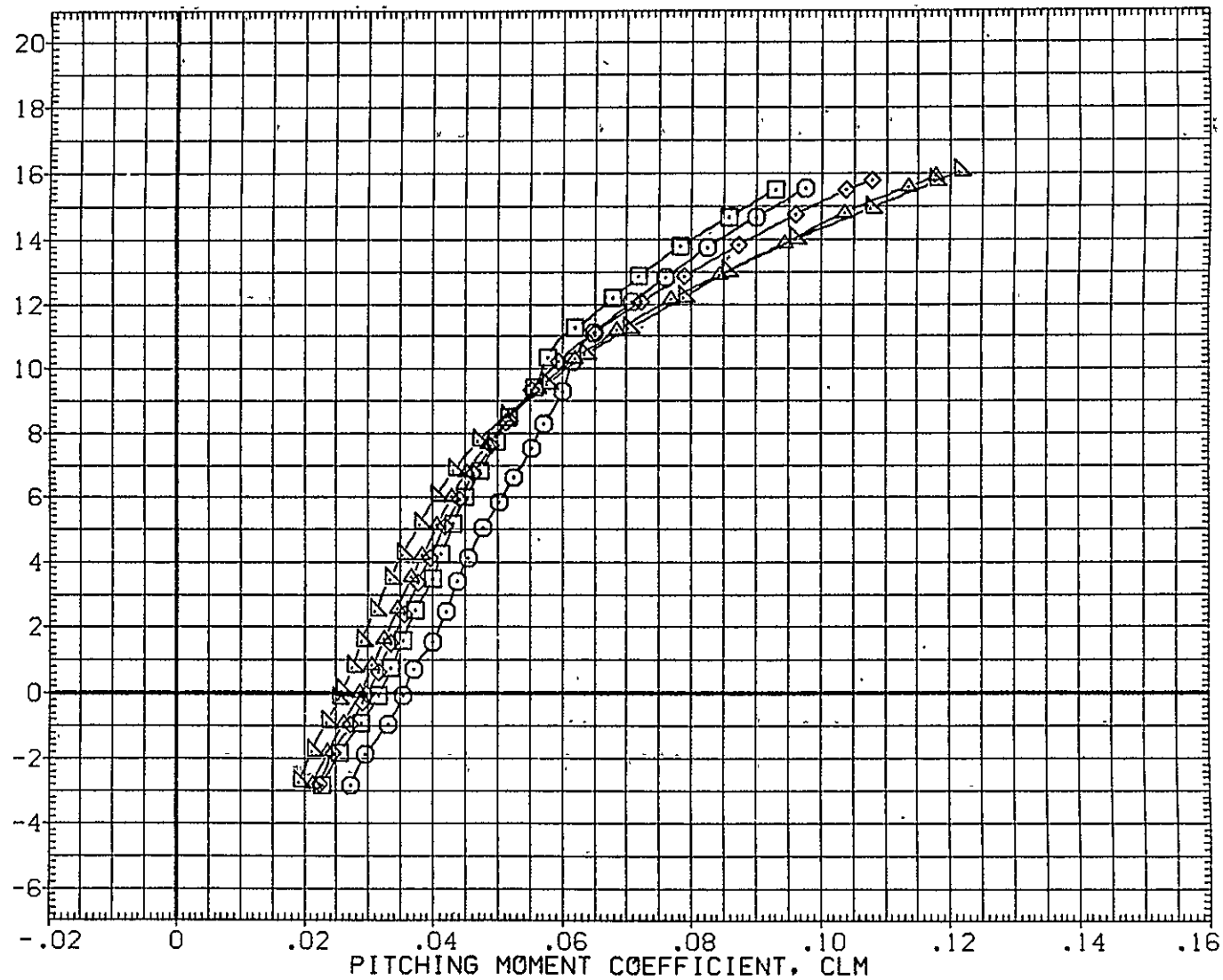


FIG. 73 747+0RB(4 DEG), HORIZ OFF, FLAPS UP FERRY

0RB

CA5 K1 FO H15.1A V9.1 (PLUS. ORB TC5 AT38.3)(RGM108)

SYMBOL	MACH	PARAMETRIC VALUES			
○	.300	BETA	.000	STAB	-3.200
□	.500	ELV-1B	.000	ELV-0B	3.000
◇	.600	S1-2	.000	S3-4	.000
△	.700	S5-6	.000	ORB	4.000

REFERENCE INFORMATION		
SREF	5'00.0000	SQ.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	0300	

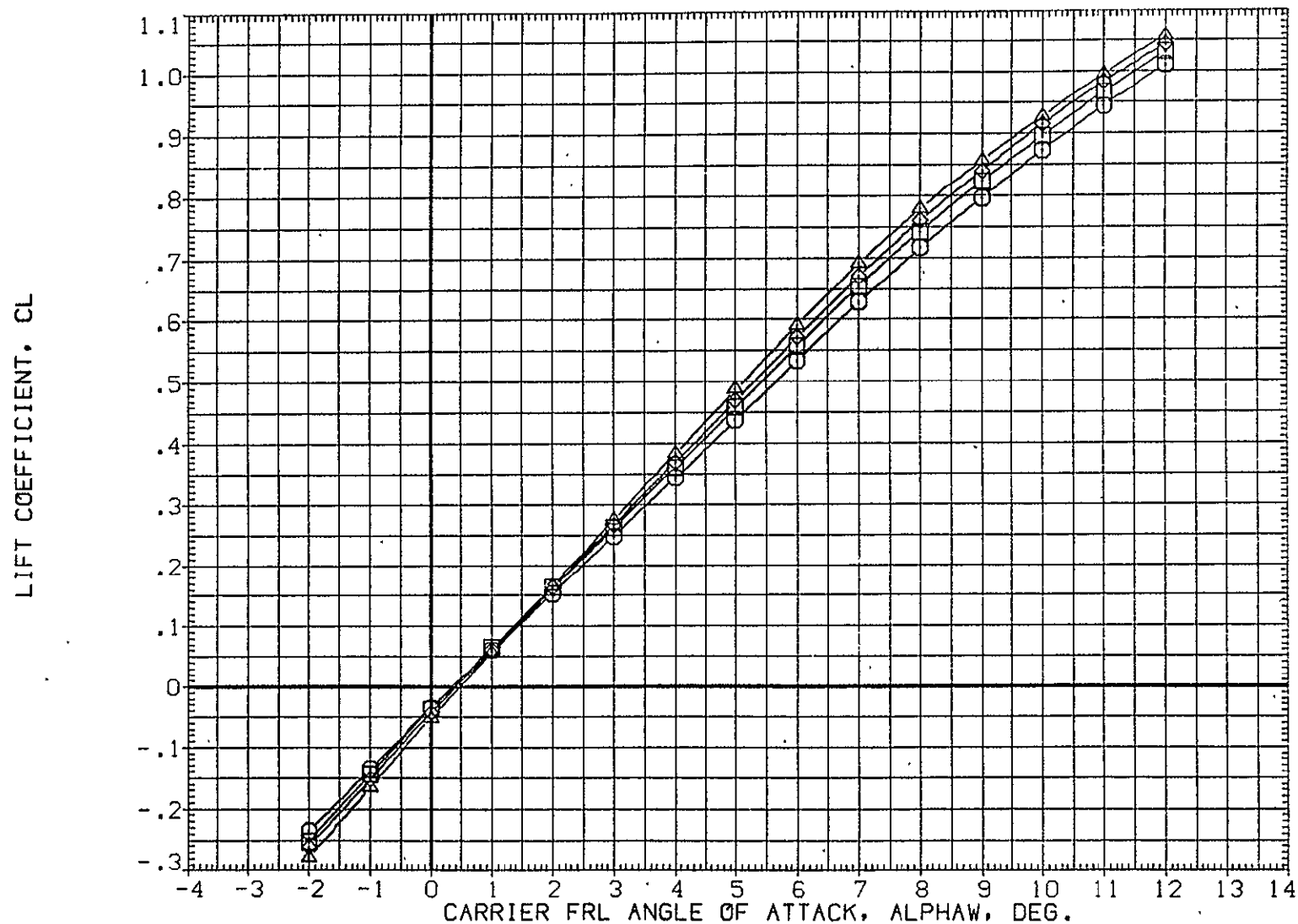


FIG. 74 747+ORB(4 DEG), BASIC TAIL, FLAPS UP FERRY(S=-3.2)

SYMBOL	MACH	PARAMETRIC VALUES			
○	.300	BETA	.000	STAB	-3.200
□	.500	ELV-1B	.000	ELV-OB	3.000
◇	.600	S1-2	.000	S3-4	.000
△	.700	S5-6	.000	ICRB	4.000

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

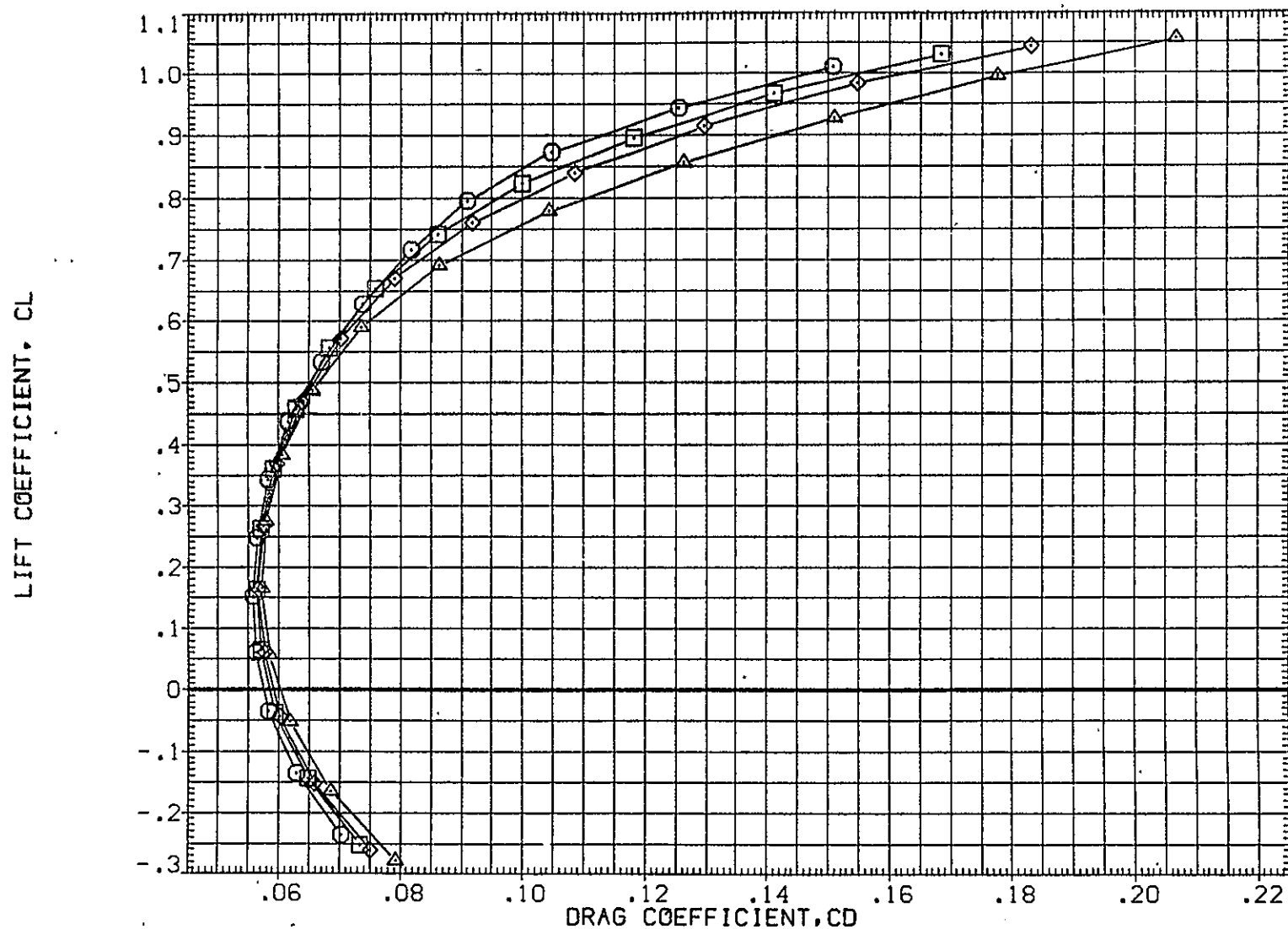


FIG. 74 747+ORB(4 DEG), BASIC TAIL, FLAPS UP FERRY(S=-3.2)

TOTAL

PAGE 294

CA5 K1 FO H15.1A V9.1 (PLUS. 0RB TC5 AT38.3)(RGM108)

SYMBOL	MACH	BETA	PARAMETRIC VALUES
○	.300		.000 STAB -3.200
□	.500	ELV-1B	.000 ELV-0B 3.000
◇	.600	S1-2	.000 S3-4 .000
△	.700	S5-6	.000 10RB 4.000

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

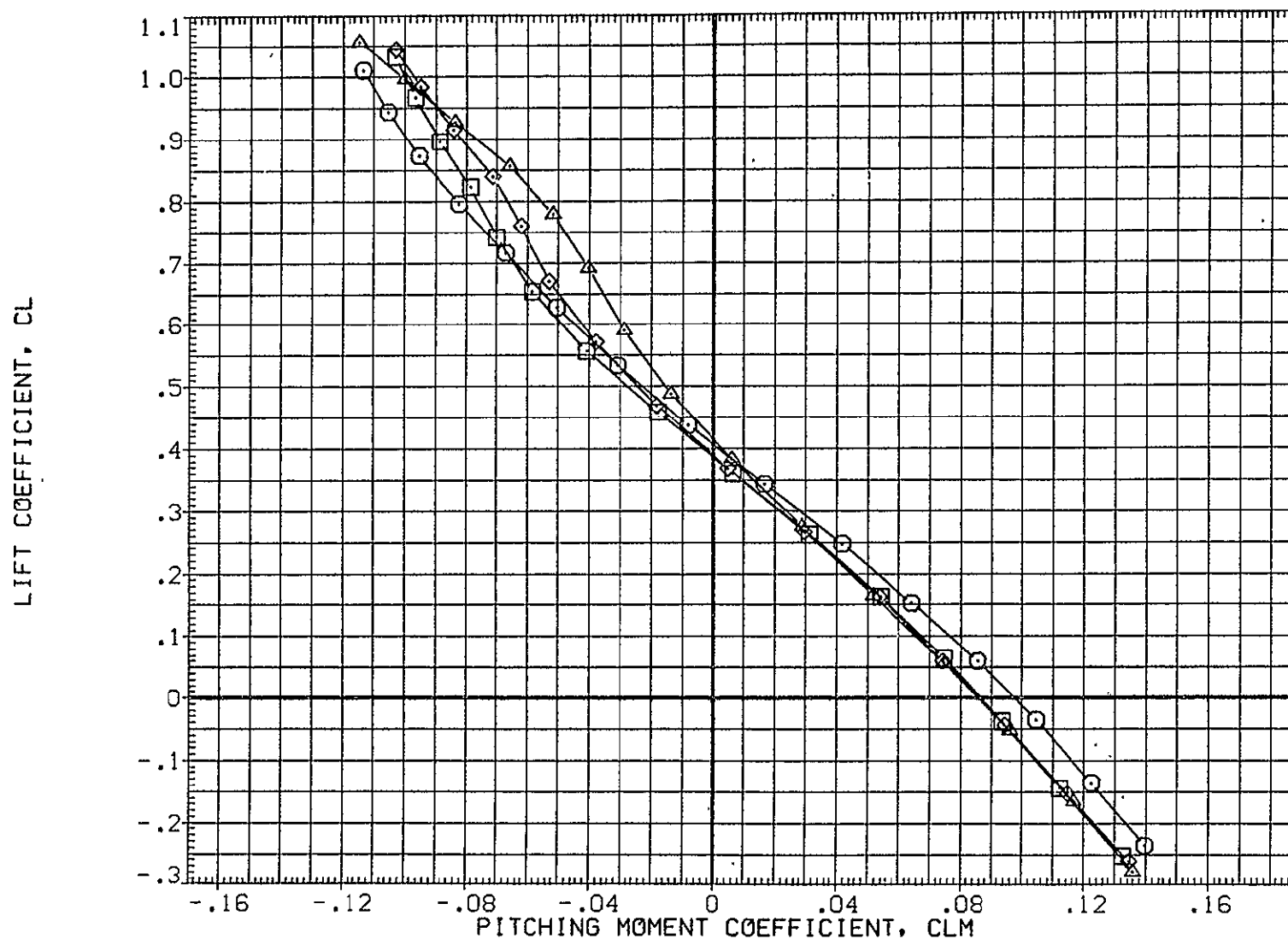


FIG. 74 747+0RB(4 DEG), BASIC TAIL, FLAPS UP FERRY(S=-3.2)

SYMBOL	MACH	PARAMETRIC VALUES
○	.300	BETA .000 STAB -3.200
□	.500	ELV-1B .000 ELV-0B 3.000
◇	.600	S1-2 .000 S3-4 .000
△	.700	S5-6 .000 10RB 4.000

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

CARRIER FRL ANGLE OF ATTACK, ALPHA, DEG.

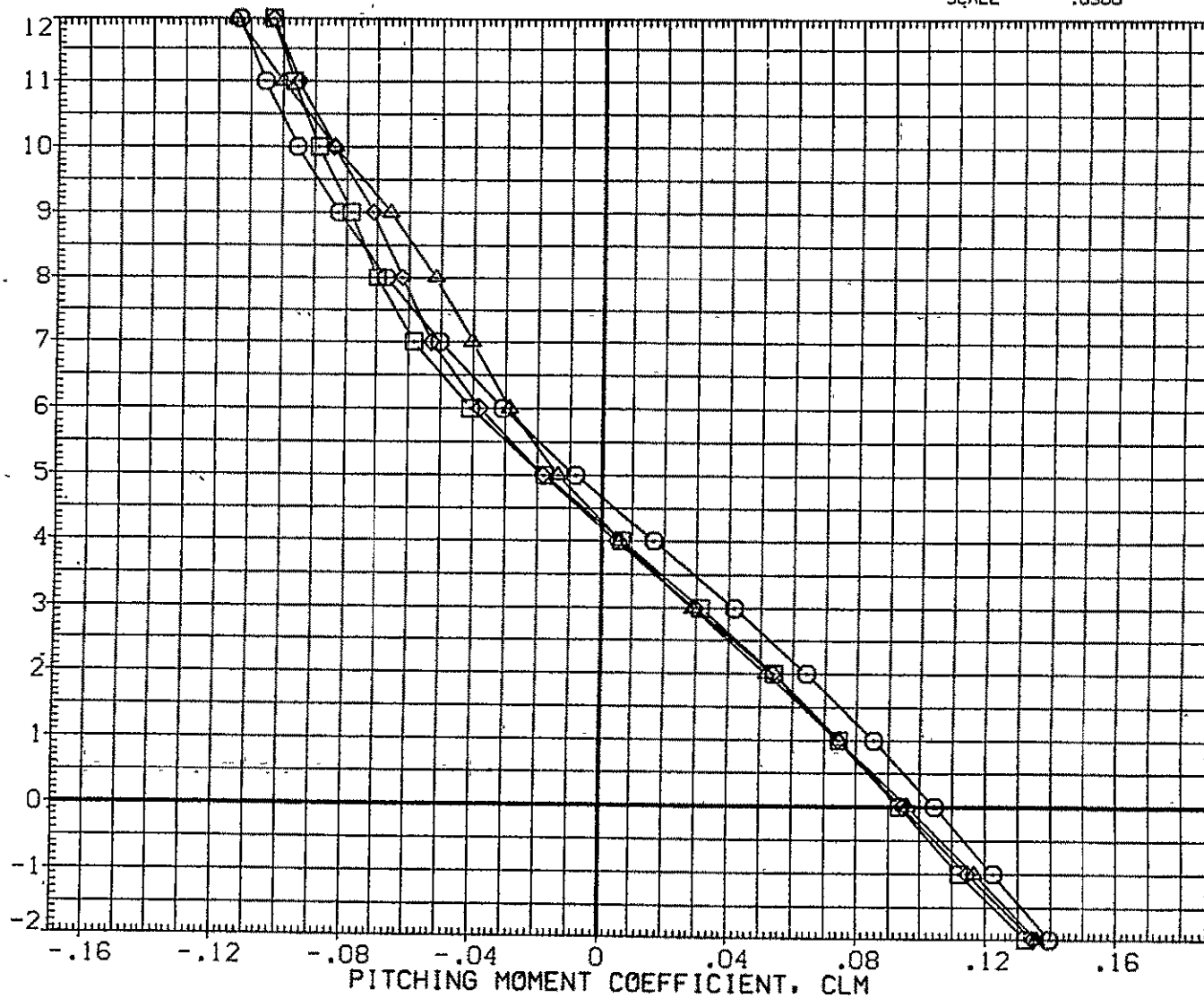


FIG. 74 747+ORB(4 DEG), BASIC TAIL, FLAPS UP FERRY(S=-3.2)

2-5

CA5 K1 FO H15.1A V9.1 MINUS ORB TC5 AT38.3 (BGM108)

SYMBOL	MACH	PARAMETRIC VALUES			
○	.300	BETA	.000	STAB	-3.200
□	.500	ELV-1B	.000	ELV-0B	3.000
◇	.600	S1-2	.000	S3-4	.000
△	.700	S5-6	.000	IORB	4.000

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

INCREMENTAL LIFT FORCE COEFFICIENT(STABILITY AXIS), DCL

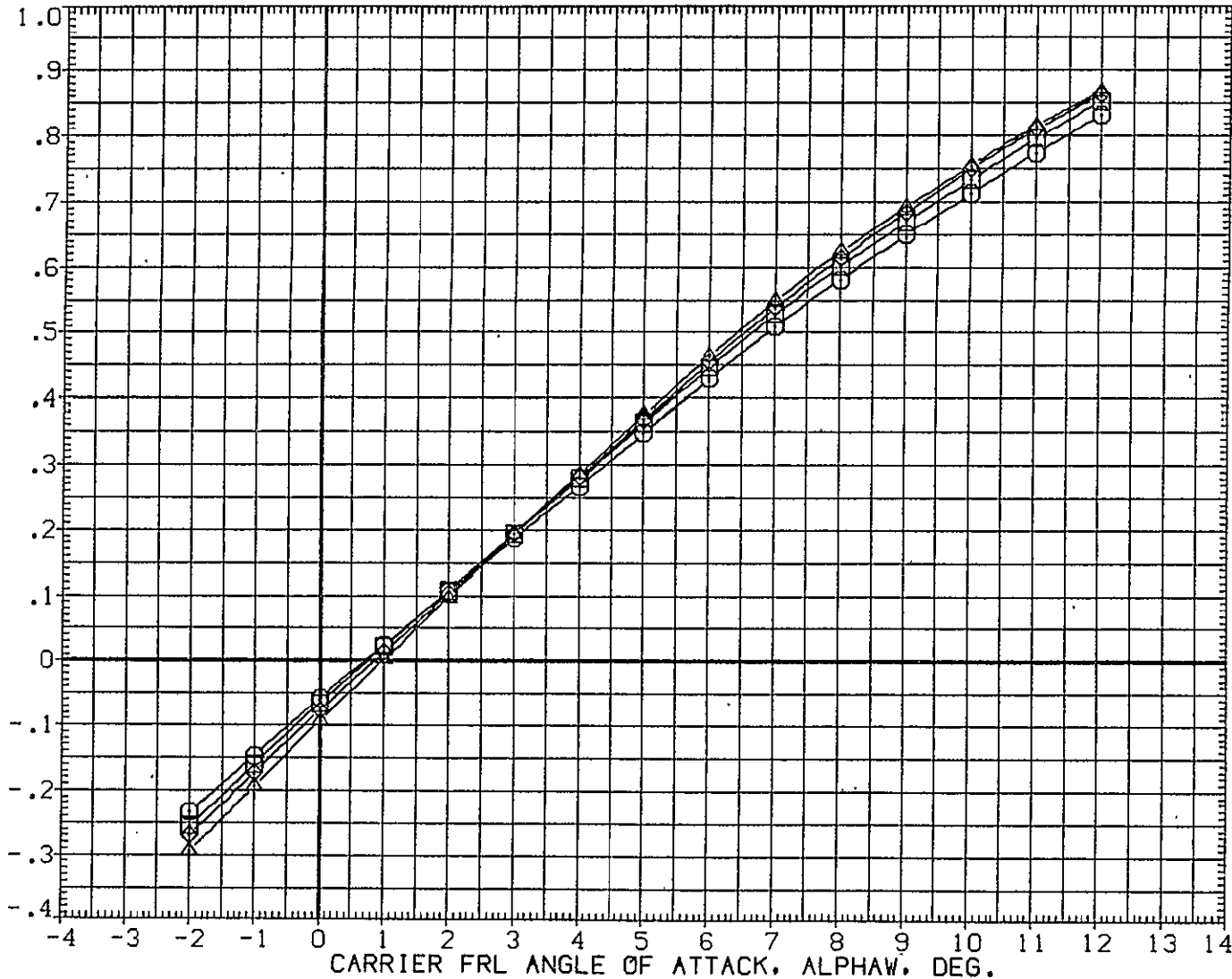


FIG. 75 747+ORB(4 DEG), BASIC TAIL, FLAPS UP FERRY(S=-3.2)

747

SYMBOL	MACH	BETA	PARAMETRIC VALUES
○	.300	.000	STAB -3.200
□	.500	ELV-1B	.000 ELV-0B 3.000
◇	.600	S1-2	.000 S3-4 .000
△	.700	S5-6	.000 10RB 4.000

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

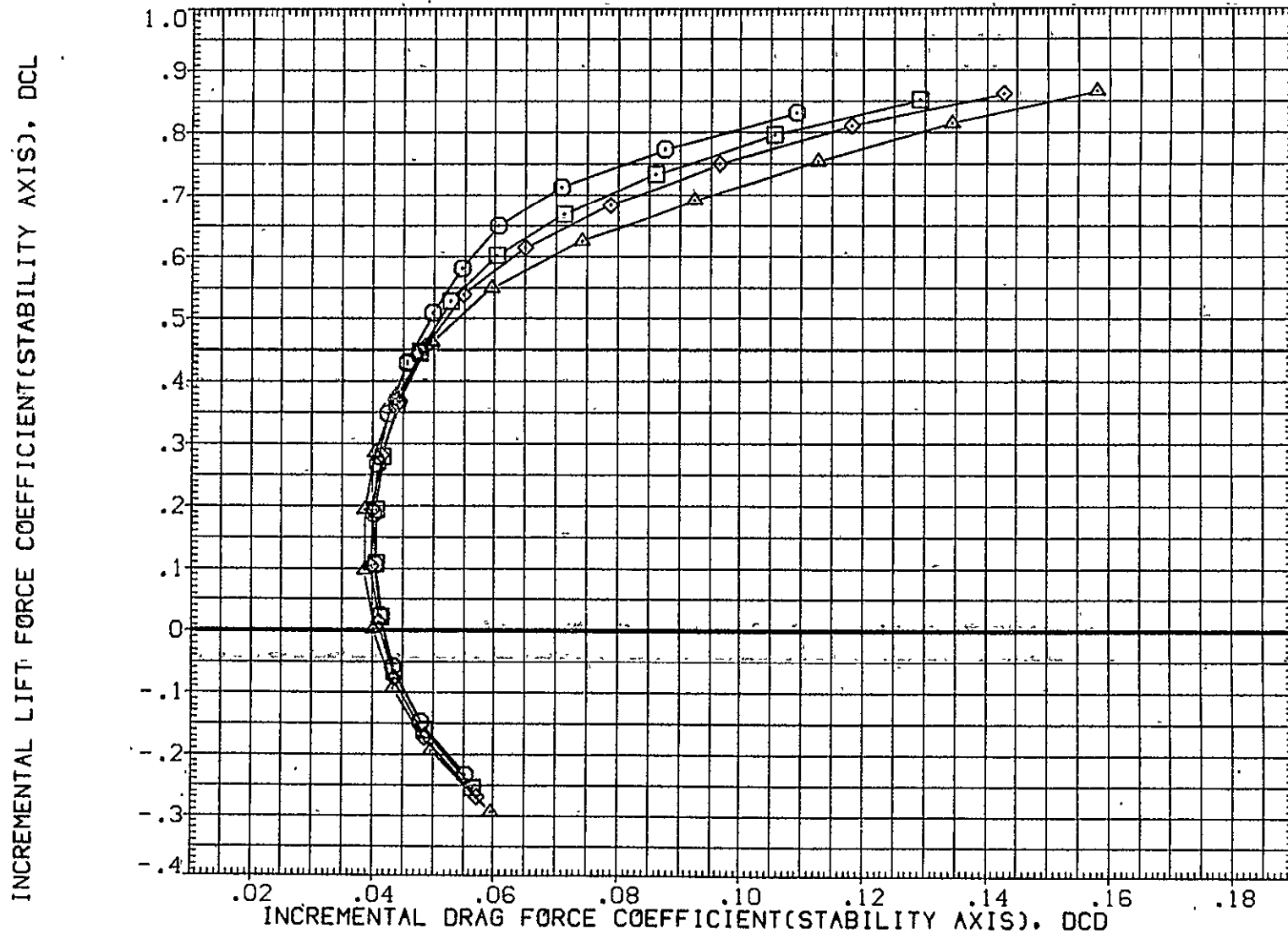


FIG. 75 747+0RB(4 DEG), BASIC TAIL, FLAPS UP FERRY(S=-3.2)

747

CA5 K1 FO H15.1A V9.1 MINUS ORB TC5 AT38.3 (BGM108)

SYMBOL
○
□
◇
△

MACH
.300
.500
.600
.700

BETA
ELV-1B
S1-2
S5-6

PARAMETRIC VALUES
.000 STAB
.000 ELV-0B
.000 S3-4
.000 IORB

-3.200
3.000
.000
4.000

REFERENCE INFORMATION

SREF	5500.0000	SQ.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

INCREMENTAL LIFT FORCE COEFFICIENT(STABILITY AXIS), DCL

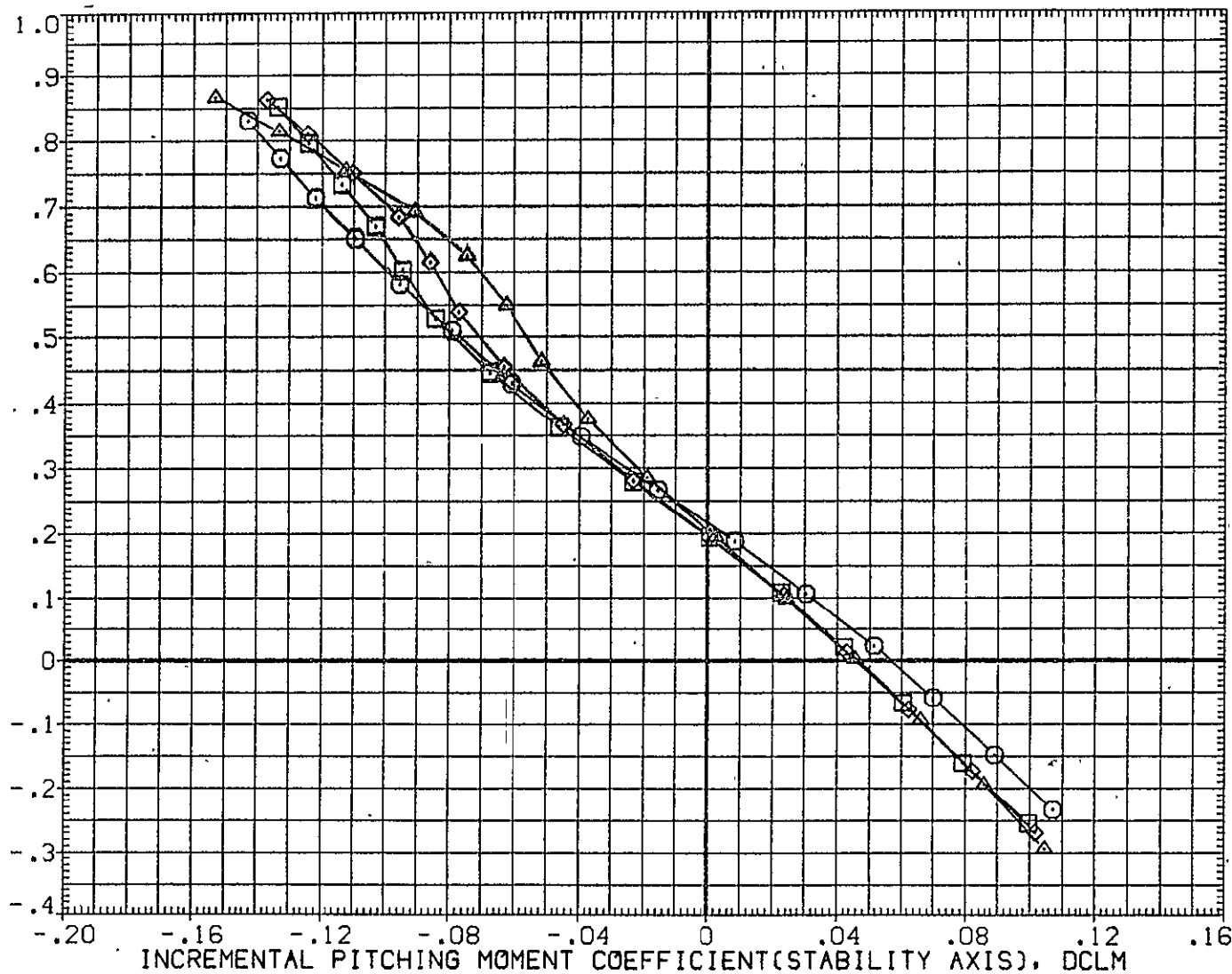


FIG. 75 747+ORB(4 DEG), BASIC TAIL, FLAPS UP FERRY(S=-3.2)

747

SYMBOL	MACH	BETA	PARAMETRIC VALUES	STAB	
○	.300	BETA	.000	STAB	-3.200
□	.500	ELV-1B	.000	ELV-0B	3.000
◇	.600	S1-2	.000	S3-4	.000
△	.700	S5-6	.000	10RB	4.000

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

CARRIER FRL ANGLE OF ATTACK, ALPHA, DEG.

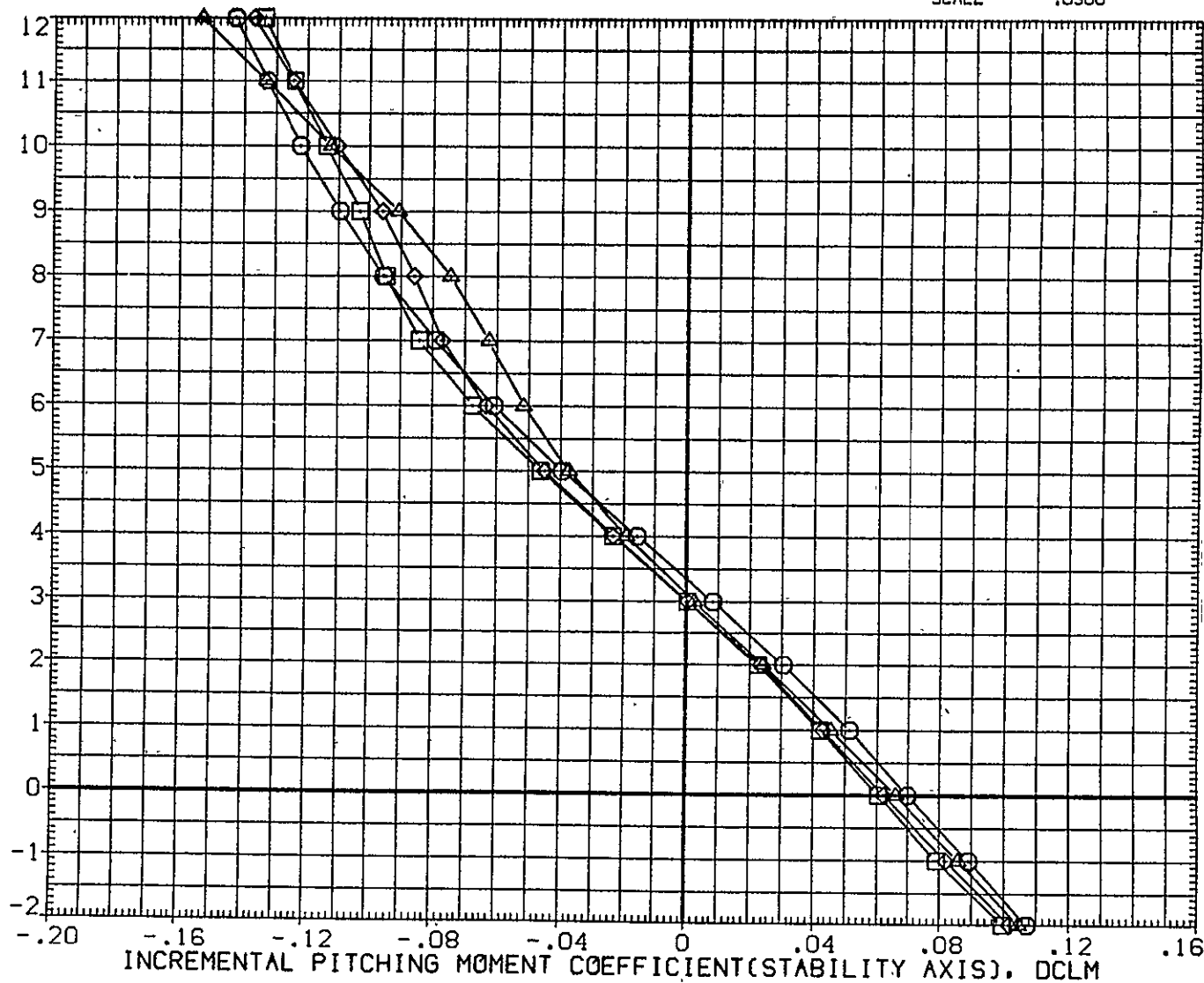


FIG. 75 747+0RB(4 DEG), BASIC TAIL, FLAPS UP FERRY(S=-3.2)

747

CA5 ORB TC5 AT38.3 (PRES. K1 FO H15.1A V9.1)(YGM108)

SYMBOL	MACH	PARAMETRIC VALUES			
○	.300	BETA	.000	STAB	-3.200
□	.500	ELV-1B	.000	ELV-OB	3.000
◇	.601	S1-2	.000	S3-4	.000
△	.701	S5-6	.000	10RB	4.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN. X0
YMRP	.0000	IN. Y0
ZMRP	375.0000	IN. Z0
SCALE	.0300	

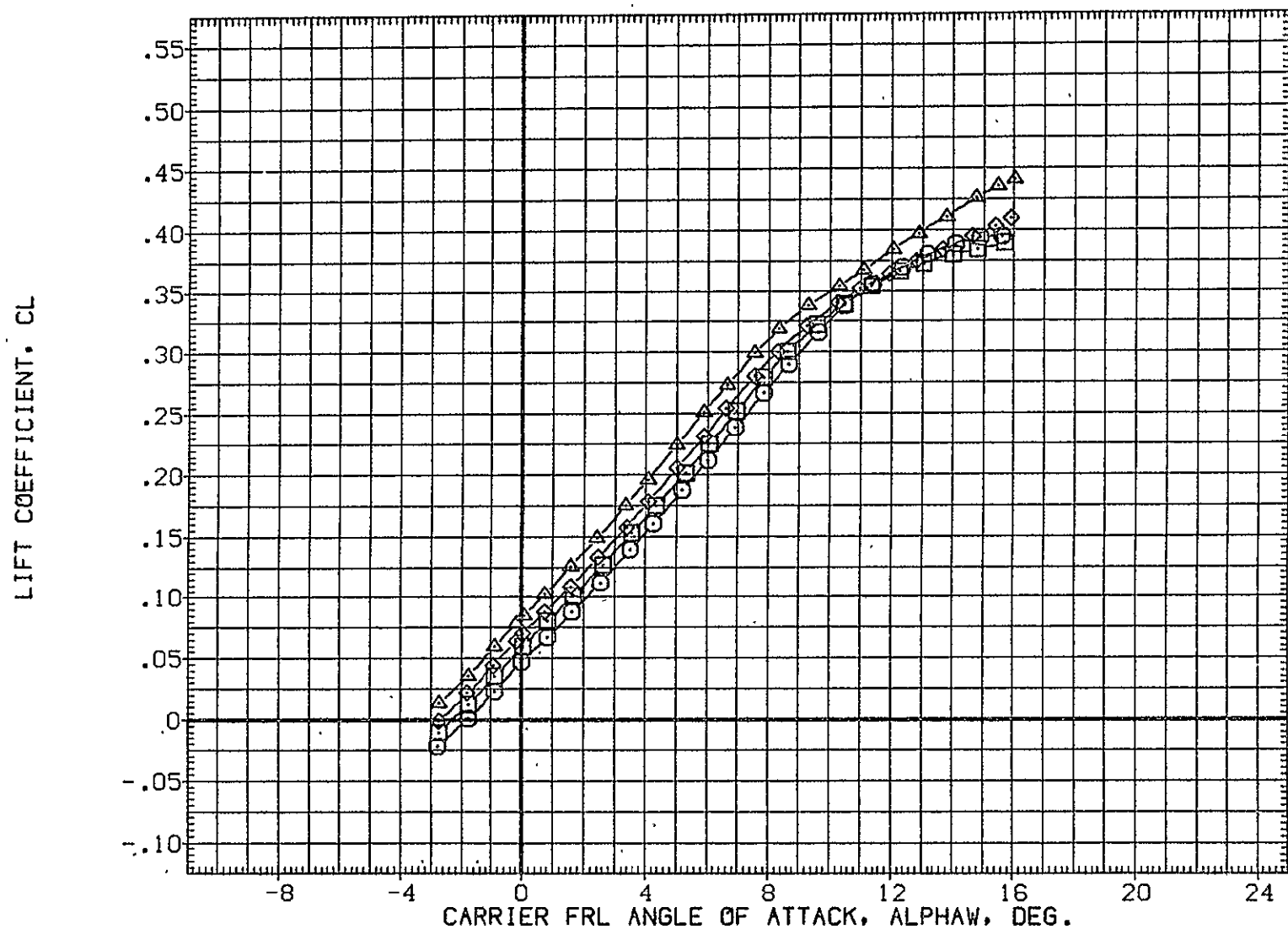


FIG. 76 747+0RB(4 DEG), BASIC TAIL, FLAPS UP FERRY(S=-3.2)

ORB

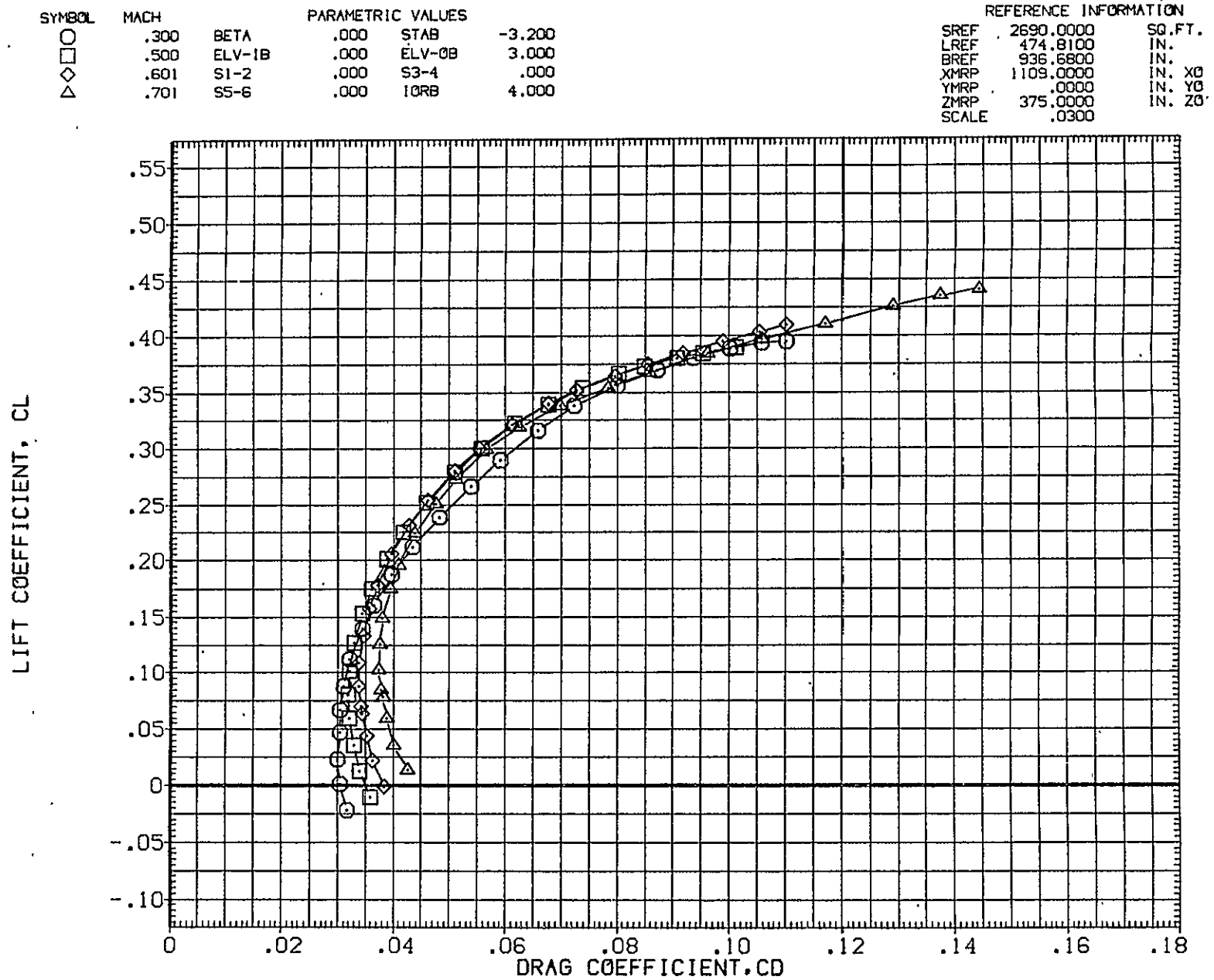


FIG. 76 747+ORB(4 DEG), BASIC TAIL, FLAPS UP FERRY(S=-3.2)

ORB

CA5 ORB TC5 AT38.3 (PRES. K1 FO H15.1A V9.1)(YGM108)

SYMBOL	MACH	PARAMETRIC VALUES			
○	.300	BETA	.000	STAB	-3.200
□	.500	ELV-18	.000	ELV-08	3.000
◇	.601	S1-2	.000	S3-4	.000
△	.701	S5-6	.000	IORB	4.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN. X0
YMRP	.0000	IN. Y0
ZMRP	375.0000	IN. Z0
SCALE	.0300	

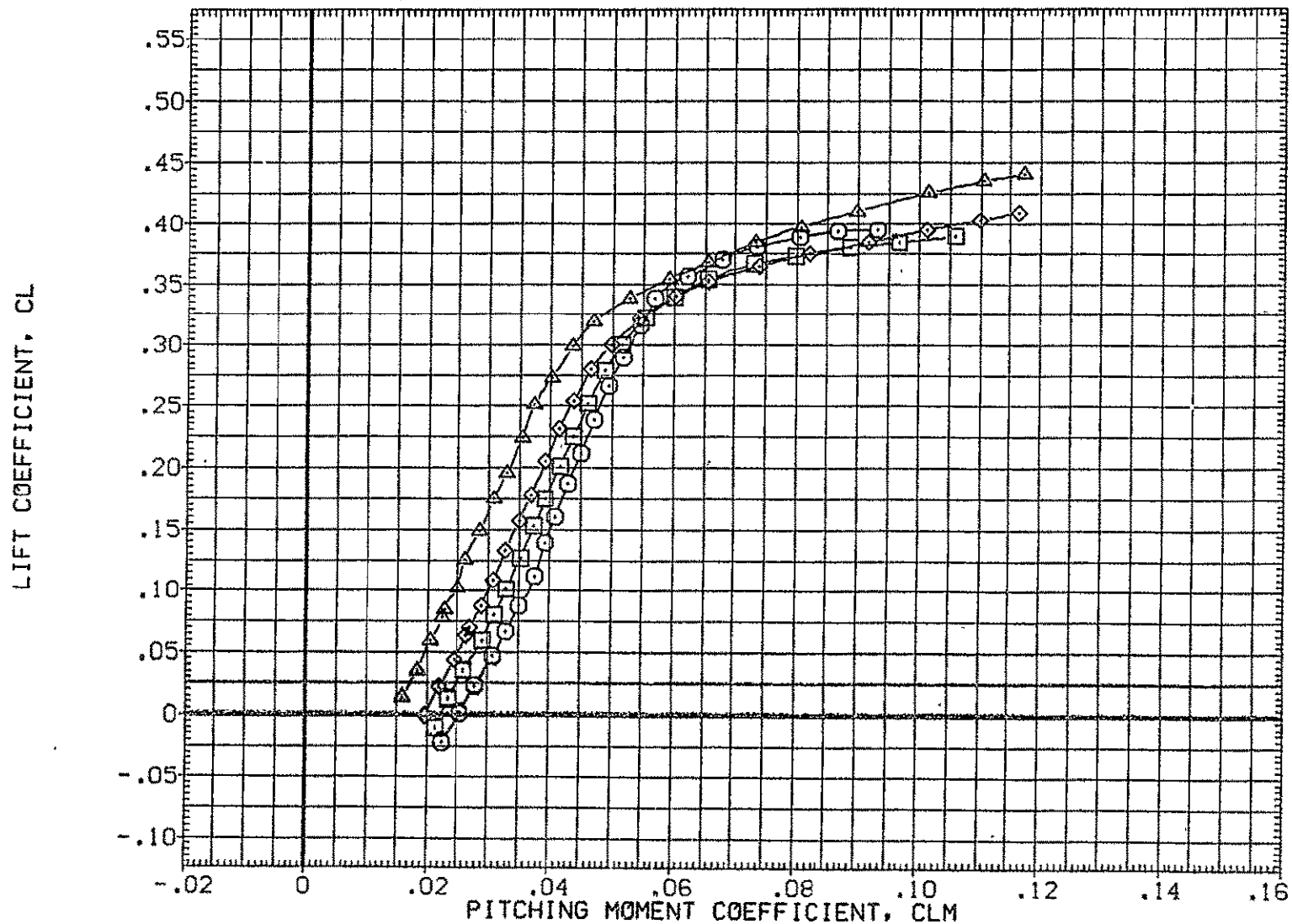


FIG. 76 747+ORB(4 DEG), BASIC TAIL, FLAPS UP FERRY(S=-3.2)

ORB

SYMBOL	MACH	PARAMETRIC VALUES			
○	.300	BETA	.000	STAB	-3.200
□	.500	ELV-1B	.000	ELV-0B	3.000
◇	.601	S1-2	.000	S3-4	.000
△	.701	S5-6	.000	10RB	4.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN. X0
YMRP	.0000	IN. Y0
ZMRP	375.0000	IN. Z0
SCALE	.0300	

CARRIER FRL ANGLE OF ATTACK, ALPHA, DEG.

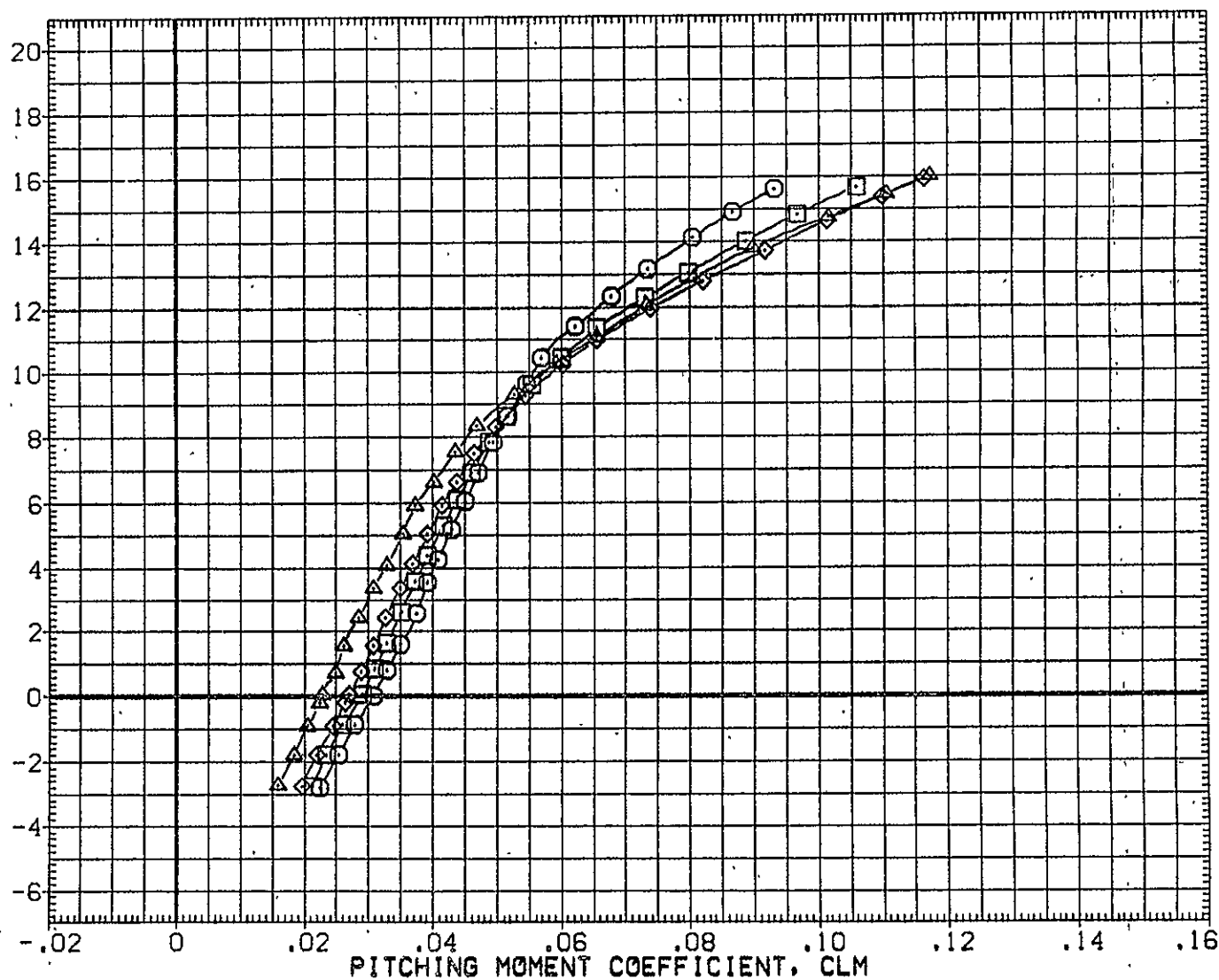


FIG. 76 747+ORB(4 DEG), BASIC TAIL, FLAPS UP FERRY(S=-3.2)

ORB

CA5 K1 F0 H15.6 V9.1 (PLUS. ORB TC5 AT38.3)(RGM112)

SYMBOL	MACH	PARAMETRIC VALUES				REFERENCE INFORMATION		
○	.150	BETA	.000	STAB	-3.200	SREF	5500.0000	SQ.FT.
□	.300	RUD-U	.000	RUD-L	.000	LREF	327.8000	IN.
◇	.500	ELV-1B	.000	ELV-0B	3.000	BREF	2348.0000	IN.
△	.600	S1-2	.000	S3-4	.000	XMRP	1339.9100	IN. XC
▽	.700	S5-6	.000	10RB	4.000	YMRP	.0000	IN. YC
						ZMRP	190.7500	IN. ZC
						SCALE	.0300	

LIFT COEFFICIENT, CL

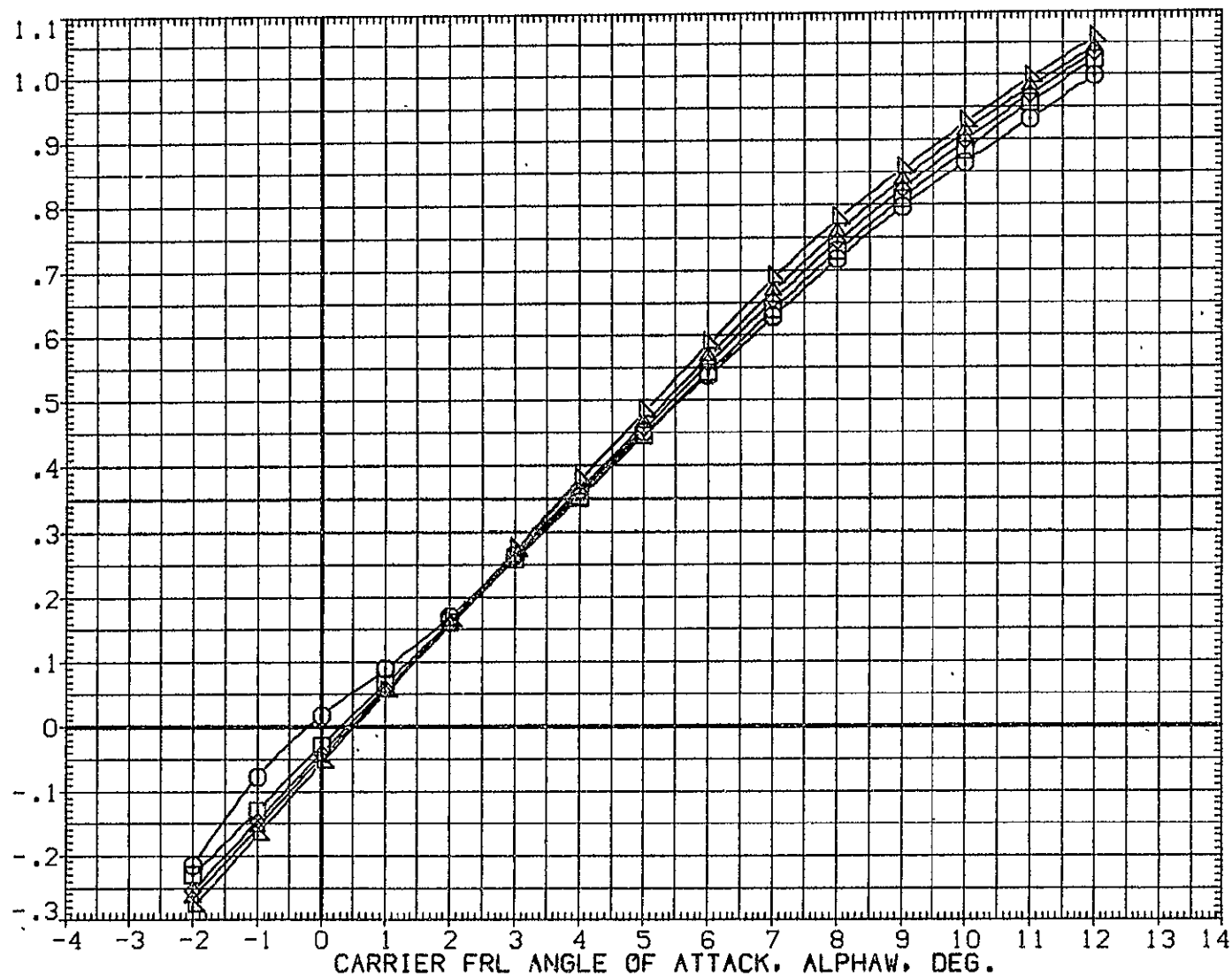


FIG. 77 747+0RB(4 DEG)+TIP FINS, FLAPS UP FERRY(S=-3.2)

TOTAL

SYMBOL	MACH	PARAMETRIC VALUES			
○	.150	BETA	.000	STAB	-3.200
□	.300	RUD-U	.000	RUD-L	.000
◇	.500	ELV-1B	.000	ELV-OB	3.000
△	.600	S1-2	.000	S3-4	.000
▽	.700	S5-6	.000	IORB	4.000

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

LIFT COEFFICIENT, CL

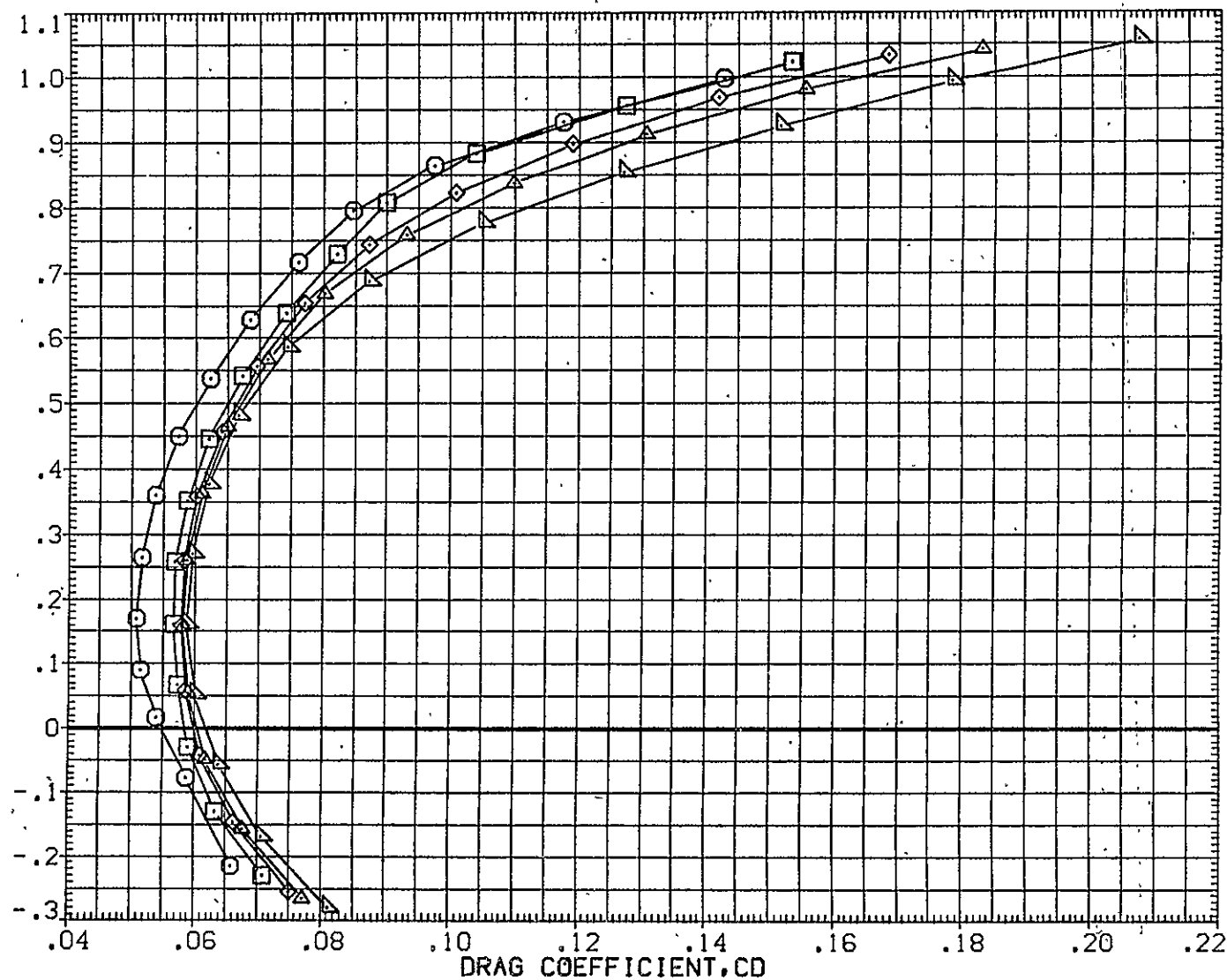


FIG. 77 747+ORB(4 DEG)+TIP FINS, FLAPS UP FERRY(S=-3.2)

TOTAL

CA5 K1 F0 H15.6 V9.1 (PLUS. 0RB TC5 AT38.3)(RGM112)

SYMBOL
○
□
◇
△
▽

MACH	PARAMETRIC VALUES			
.150	BETA	.000	STAB	-3.200
.300	RUD-U	.000	RUD-L	.000
.500	ELV-1B	.000	ELV-0B	3.000
.600	S1-2	.000	S3-4	.000
.700	S5-6	.000	10RB	4.000

REFERENCE INFORMATION

SREF	5500.0000	SG.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

LIFT COEFFICIENT, CL

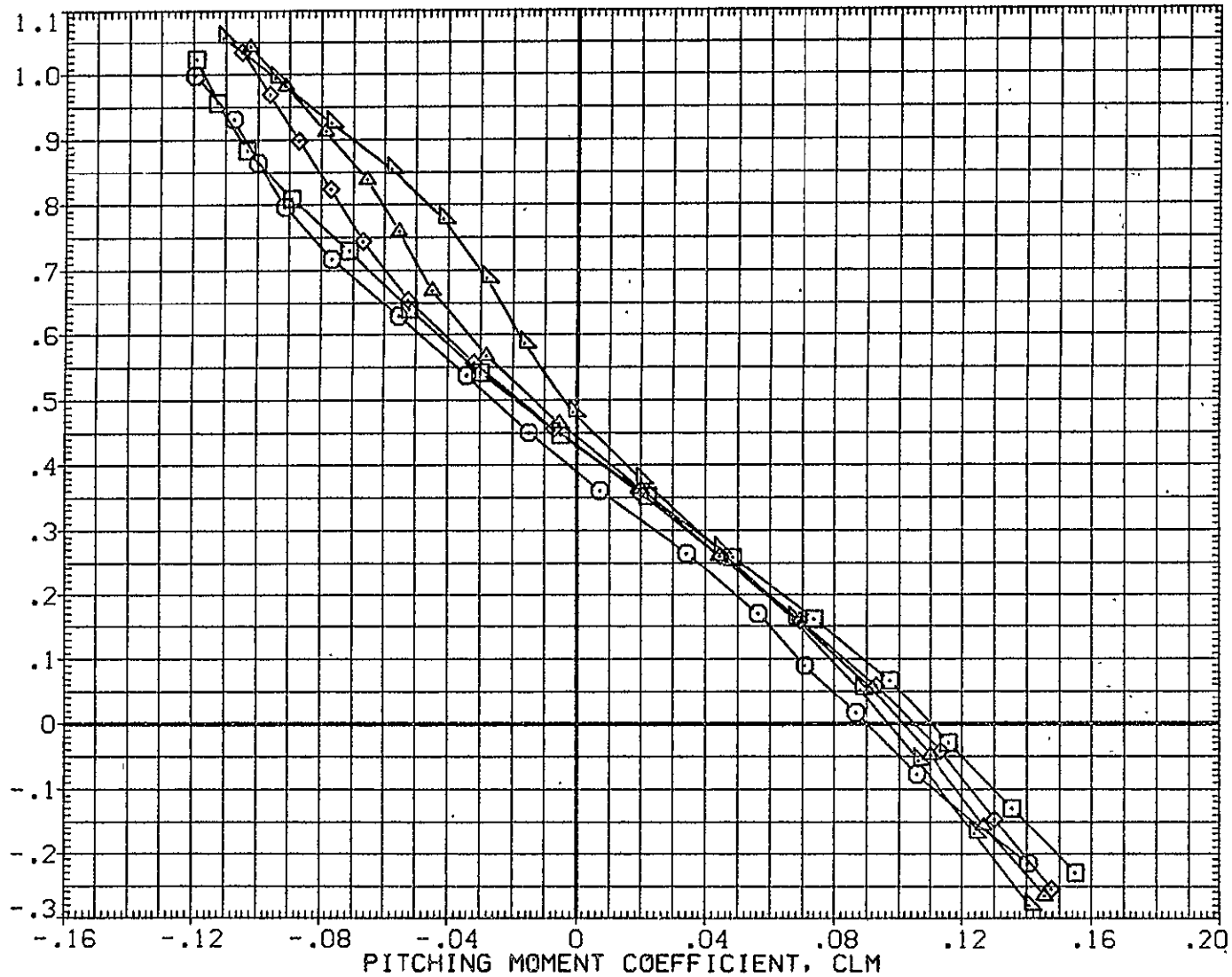


FIG. 77 747+0RB(4 DEG)+TIP FINS, FLAPS UP FERRY(S=-3.2)

TOTAL

SYMBOL	MACH	PARAMETRIC VALUES				REFERENCE INFORMATION		
○	.150	BETA	.000	STAB	-3.200	3REF	.5500.0000	SQ.FT.
□	.300	RUD-U	.000	RUD-L	.000	REF	327.8000	IN.
◇	.500	ELV-1B	.000	ELV-0B	3.000	3REF	2348.0000	IN.
△	.600	S1-2	.000	S3-4	.000	KMRP	1339.9100	IN. XC
▽	.700	S5-6	.000	10RB	4.000	YMRP	.0000	IN. YC
						ZMRP	190.7500	IN. ZC
						SCALE	.0300	

CARRIER FRL ANGLE OF ATTACK, ALPHA, DEG.

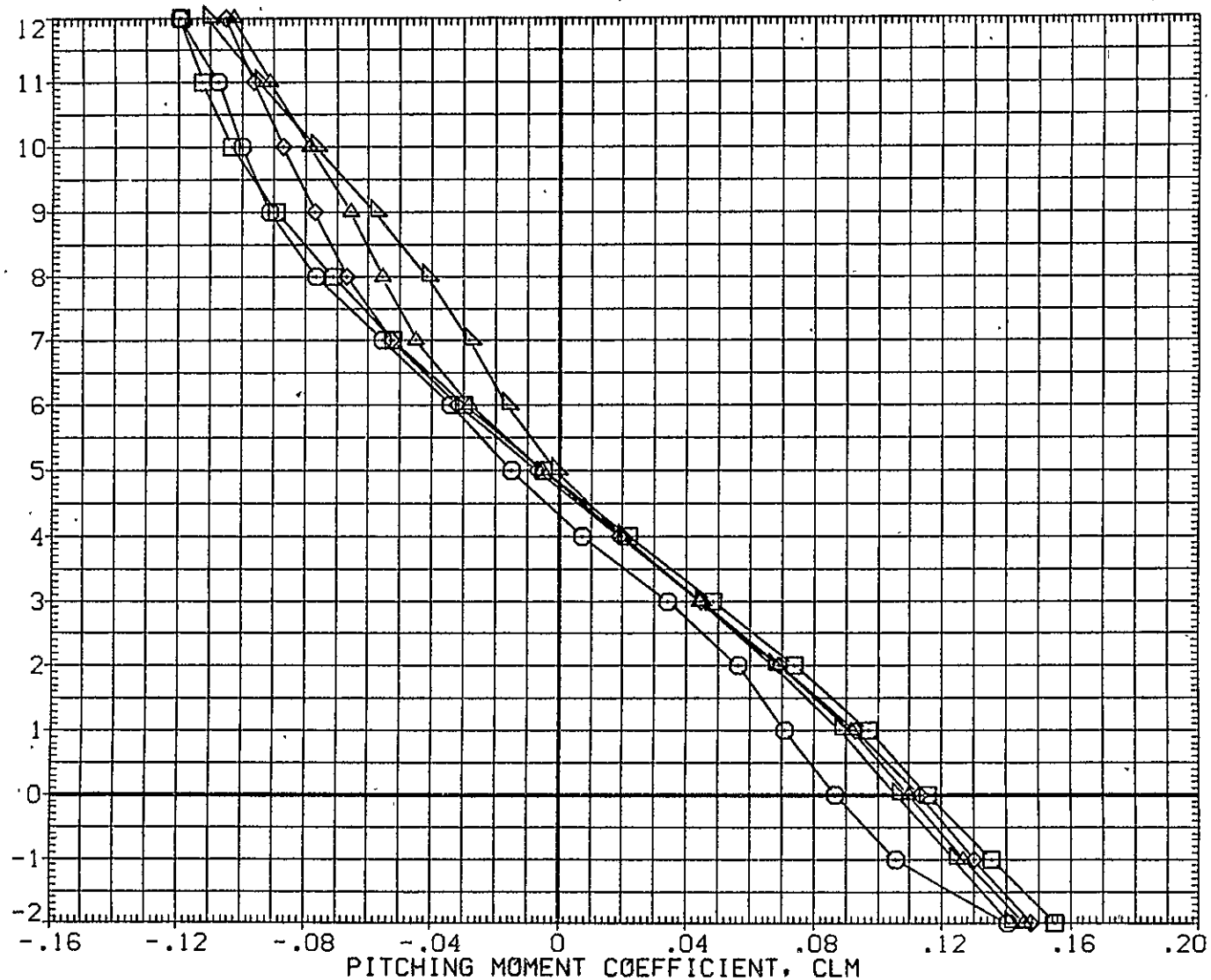


FIG. 77 747+ORB(4 DEG)+TIP FINS, FLAPS UP FERRY(S=-3.2)

TOTAL

CA5 K1 F0 H15.6 V9.1 MINUS 0RB TC5 AT38.3 (BGM112)

SYMBOL	MACH	PARAMETRIC VALUES				REFERENCE INFORMATION		
○	.150	BETA	.000	STAB	-3.200	SREF	5500.0000	SQ.FT.
□	.300	RUD-U	.000	RUD-L	.000	LREF	327.8000	IN.
◇	.500	ELV-IB	.000	ELV-OB	3.000	BREF	2348.0000	IN.
△	.600	S1-2	.000	S3-4	.000	XMRP	1339.9100	IN. XC
▽	.700	S5-6	.000	IORB	4.000	YMRP	.0000	IN. YC
						ZMRP	190.7500	IN. ZC
						SCALE	.0300	

INCREMENTAL LIFT FORCE COEFFICIENT(STABILITY AXIS), DCL

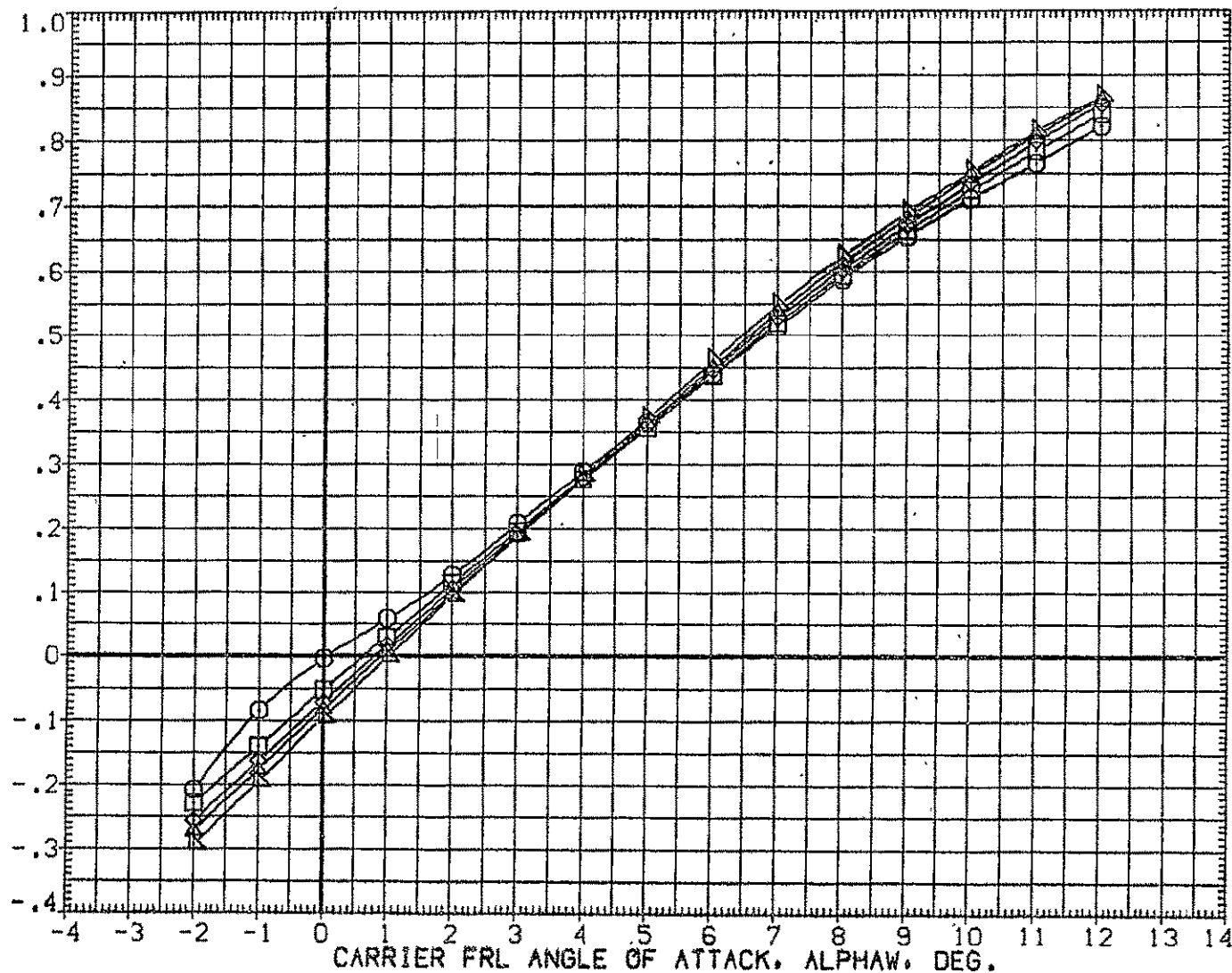


FIG. 78 747+0RB(4 DEG)+TIP FINS, FLAPS UP FERRY(S=-3.2)

SYMBOL	MACH	PARAMETRIC VALUES				REFERENCE INFORMATION		
○	.150	BETA	.000	STAB	-3.200	SREF	5500.0000	SQ.FT.
□	.300	RUD-U	.000	RUD-L	.000	LREF	327.8000	IN.
◇	.500	ELV-1B	.000	ELV-0B	3.000	BREF	2348.0000	IN.
△	.600	S1-2	.000	S3-4	.000	XMRP	1339.9100	IN. XC
▽	.700	S5-6	.000	10RB	4.000	YMRP	.0000	IN. YC
						ZMRP	190.7500	IN. ZC
						SCALE	.0300	

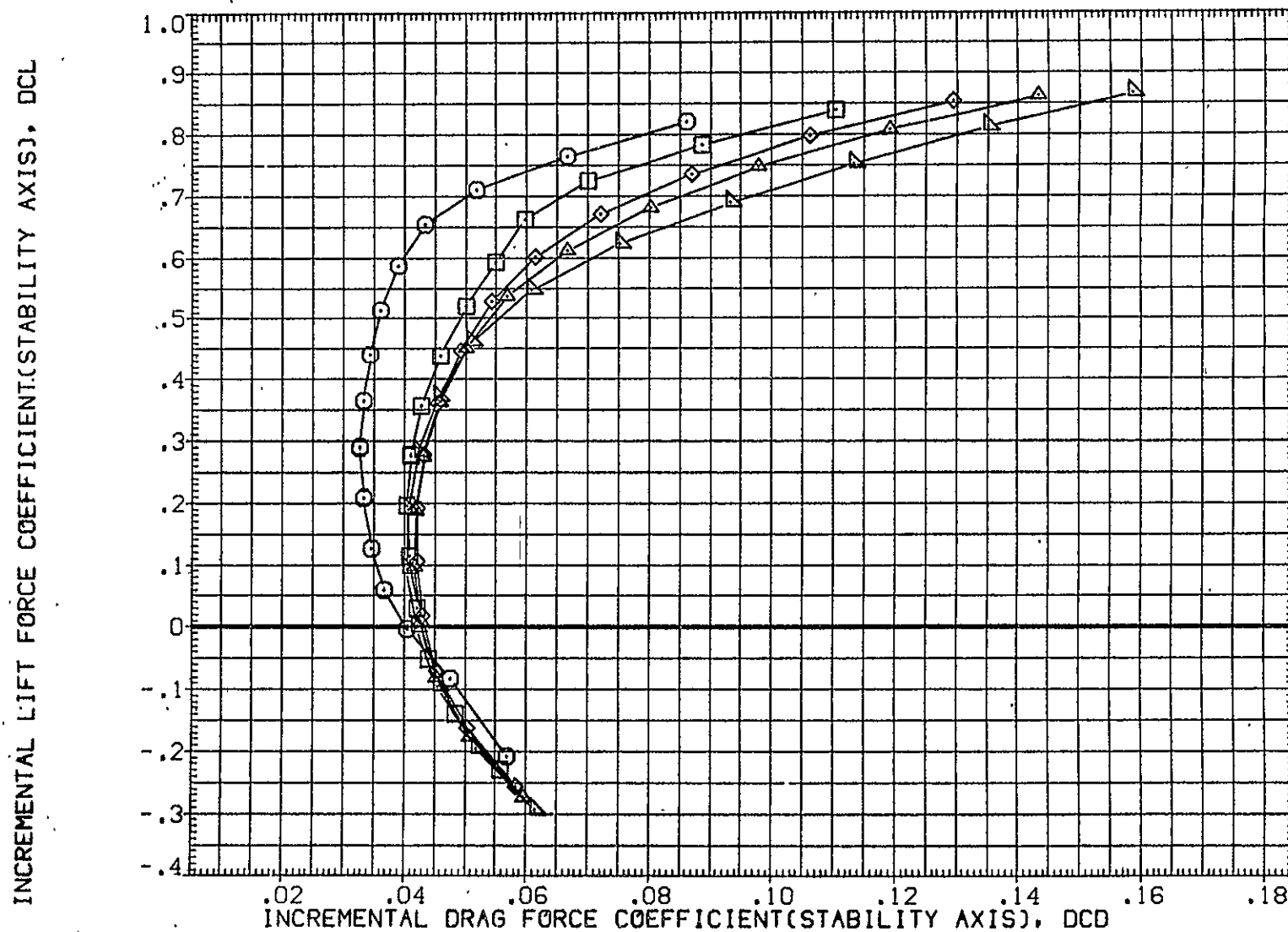


FIG. 78 747+0RB(4 DEG)+TIP FINS, FLAPS UP FERRY(S=-3.2)

747

CA5 K1 F0 H15.6 V9.1 MINUS 0RB TC5 AT38.3 (BGM112)

SYMBOL	MACH	PARAMETRIC VALUES				REFERENCE INFORMATION		
○	.150	BETA	.000	STAB	-3.200	SREF	5500.0000	SQ.FT.
□	.300	RUD-U	.000	RUD-L	.000	LREF	327.8000	IN.
◇	.500	ELV-1B	.000	ELV-0B	3.000	BREF	2348.0000	IN.
△	.600	S1-2	.000	S3-4	.000	XMRP	1339.9100	IN. XC
▽	.700	S5-6	.000	10RB	4.000	YMRP	.0000	IN. YC
						ZMRP	190.7500	IN. ZC
						SCALE	.0300	

INCREMENTAL LIFT FORCE COEFFICIENT(STABILITY AXIS), DCL

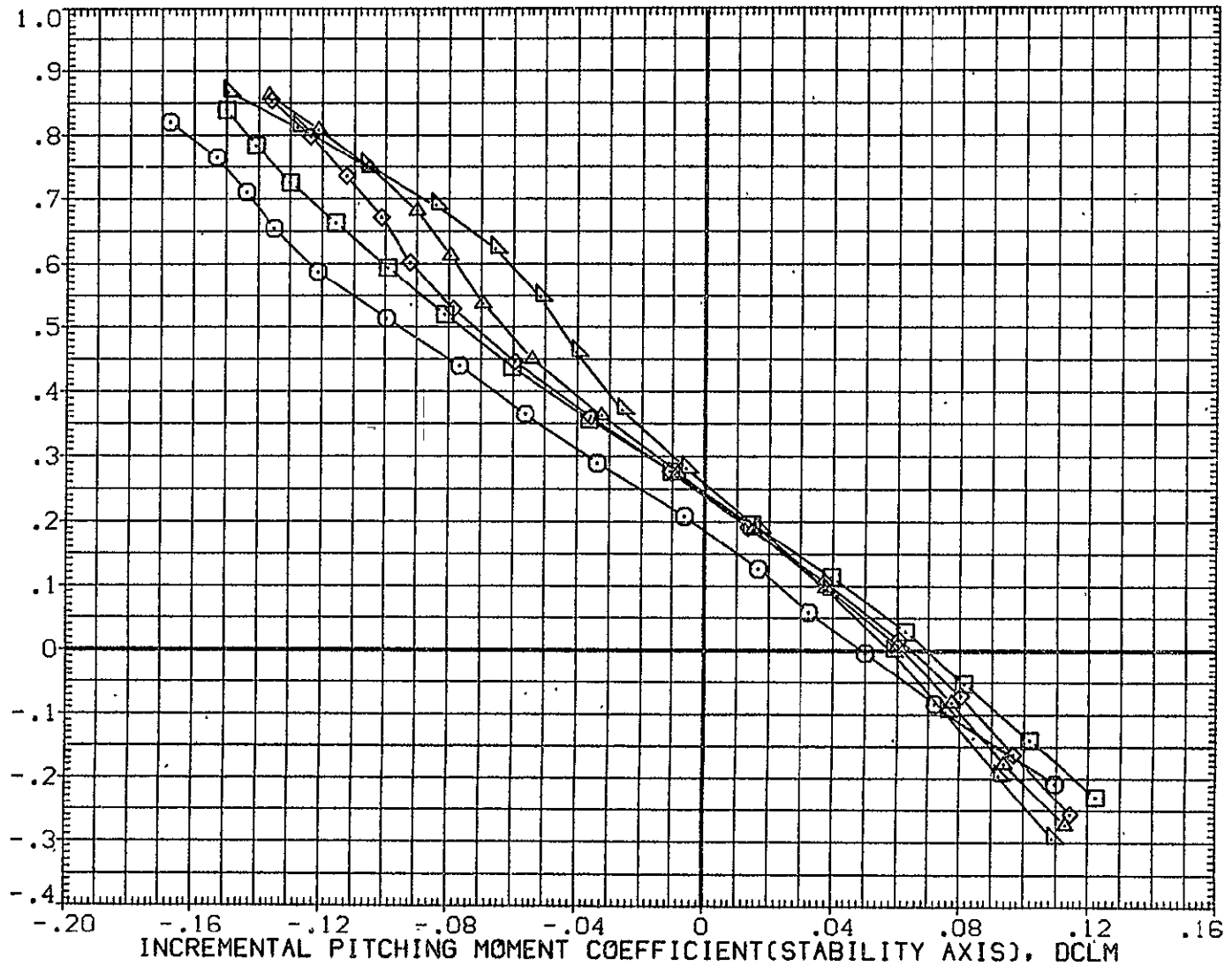


FIG. 78 747+0RB(4 DEG)+TIP FINS, FLAPS UP FERRY(S=-3.2)

SYMBOL	MACH	PARAMETRIC VALUES
○	.150	BETA .000 STAB -3.200
□	.300	RUD-U .000 RUD-L .000
◇	.500	ELV-1B .000 ELV-0B 3.000
△	.600	S1-2 .000 S3-4 .000
▽	.700	S5-6 .000 10RB 4.000

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMPP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

CARRIER FRL ANGLE OF ATTACK, ALPHA, DEG.

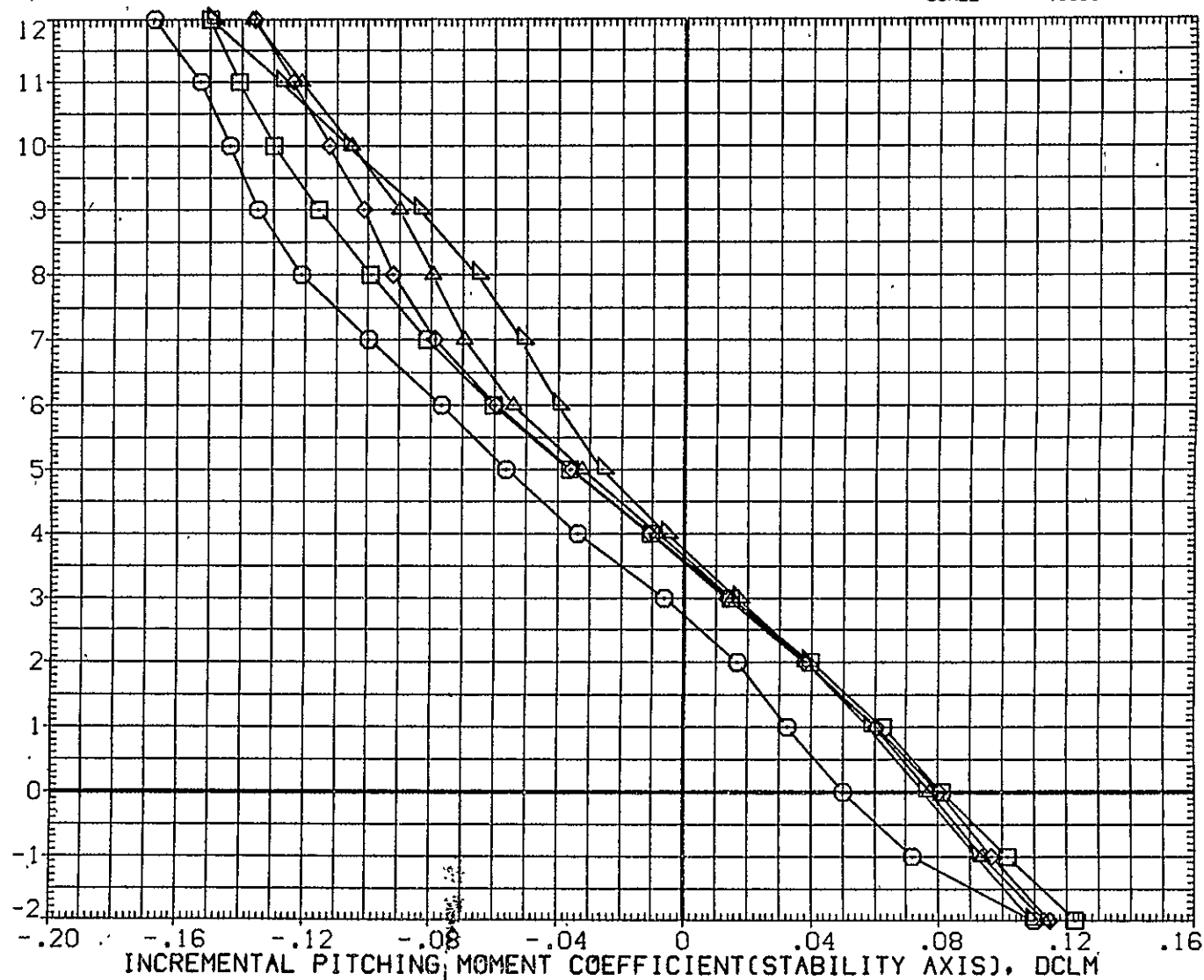


FIG. 78 747+0RB(4 DEG)+TIP FINS, FLAPS UP FERRY(S=-3.2)

747

CA5 ORB TC5 AT38.3 (PRES. K1 F0 H15.6 V9.1)(YGM112)

SYMBOL	MACH	PARAMETRIC VALUES				REFERENCE INFORMATION		
○	.150	BETA	.000	STAB	-3.200	SREF	2690.0000	SQ.FT.
□	.300	RUD-U	.000	RUD-L	.000	LREF	474.8100	IN.
◇	.499	ELV-1B	.000	ELV-OB	3.000	BREF	936.6800	IN.
△	.600	S1-2	.000	S3-4	.000	XMRP	1109.0000	IN. X0
▽	.700	S5-6	.000	IORB	4.000	YMRP	.0000	IN. Y0
						ZMRP	375.0000	IN. Z0
						SCALE	.0300	

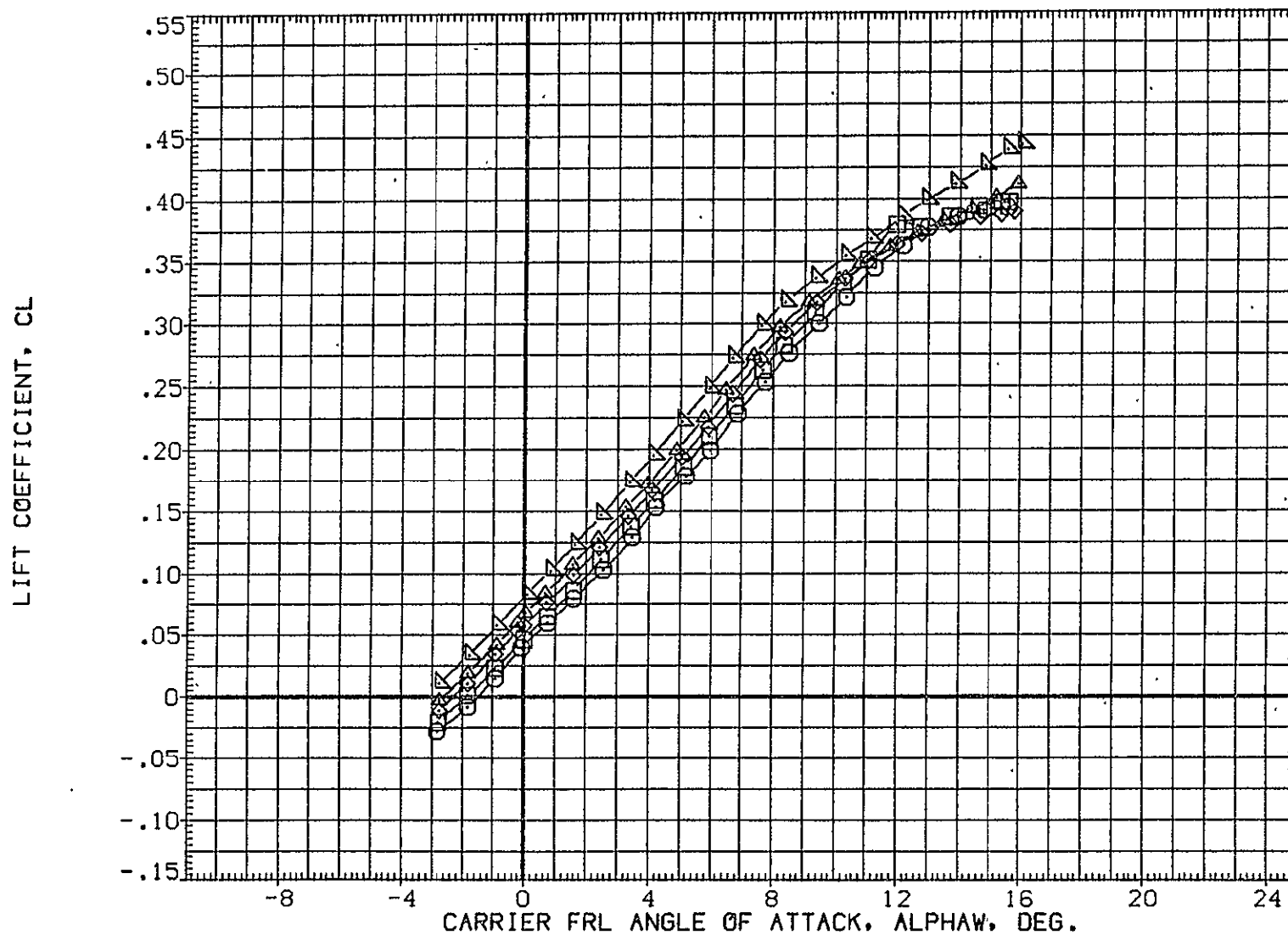


FIG. 79 747+ORB(4 DEG)+TIP FINS, FLAPS UP FERRY(S=-3.2)

ORB

SYMBOL	MACH	PARAMETRIC VALUES				REFERENCE INFORMATION		
○	.150	BETA	.000	STAB	-3.200	SREF	2690.0000	SQ.FT.
□	.300	RUD-U	.000	RUD-L	.000	LREF	474.8100	IN.
◇	.499	ELV-1B	.000	ELV-0B	3.000	BREF	936.6800	IN.
△	.600	S1-2	.000	S3-4	.000	XMRF	1109.0000	IN. X0
▽	.700	S5-6	.000	10RB	4.000	YMRF	.0000	IN. Y0
						ZMRF	375.0000	IN. Z0
						SCALE	.0300	

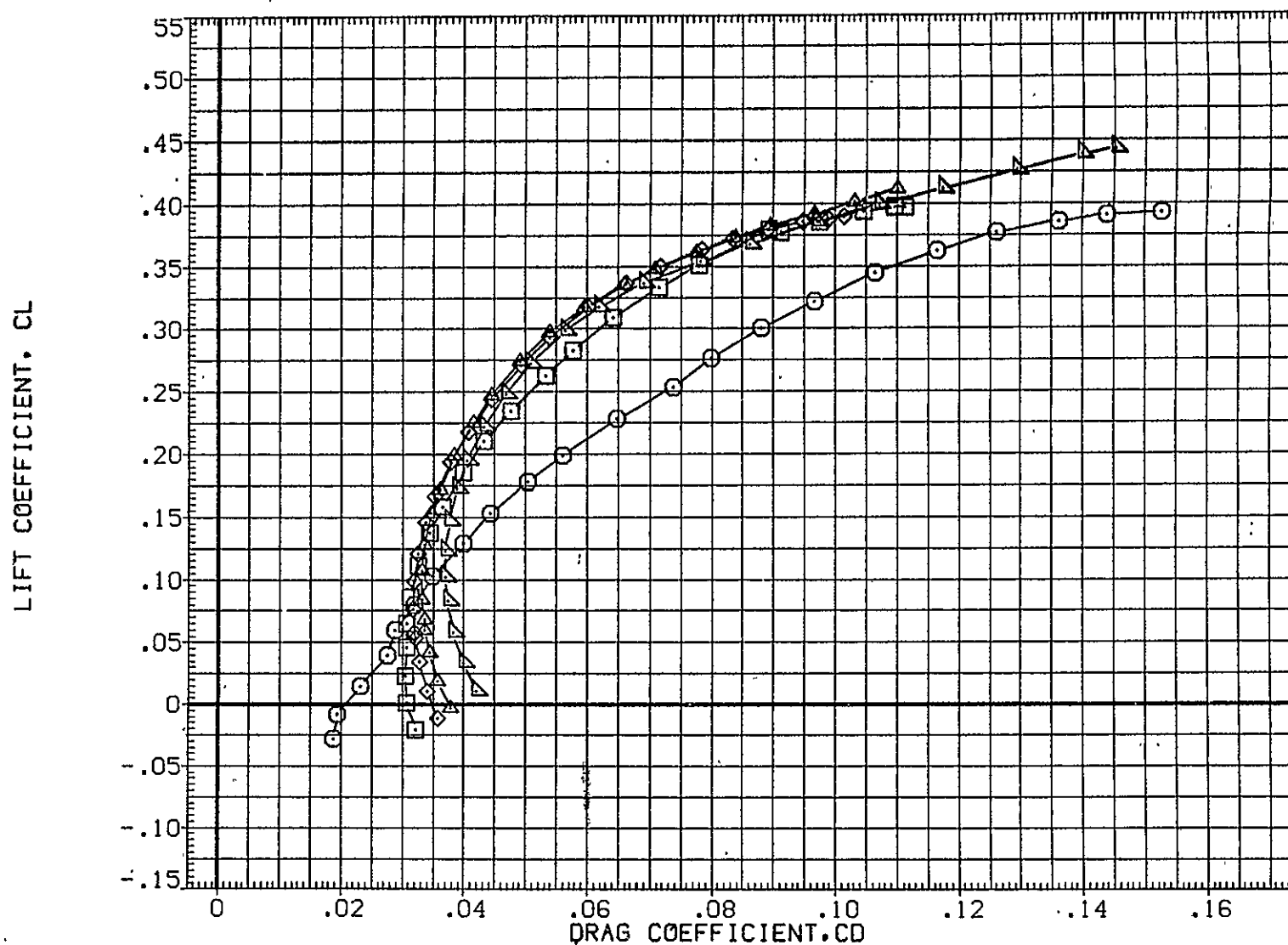


FIG. 79 747+ORB(4 DEG)+TIP FINS, FLAPS UP FERRY(S=-3.2)

ORB

CA5 0RB TC5 AT38.3 (PRES. K1 FO H15.6 V9.1)(YGM112)

SYMBOL	MACH	PARAMETRIC VALUES				REFERENCE INFORMATION		
○	.150	BETA	.000	STAB	-3.200	SREF	2690.0000	SQ.FT.
□	.300	RUD-U	.000	RUD-L	.000	LREF	474.8100	IN.
◇	.499	ELV-1B	.000	ELV-0B	3.000	BREF	936.6800	IN.
△	.600	S1-2	.000	S3-4	.000	XMRP	1109.0000	IN. X0
▽	.700	S5-6	.000	10RB	4.000	YMRP	.0000	IN. Y0
						ZMRP	375.0000	IN. Z0
						SCALE	.0300	

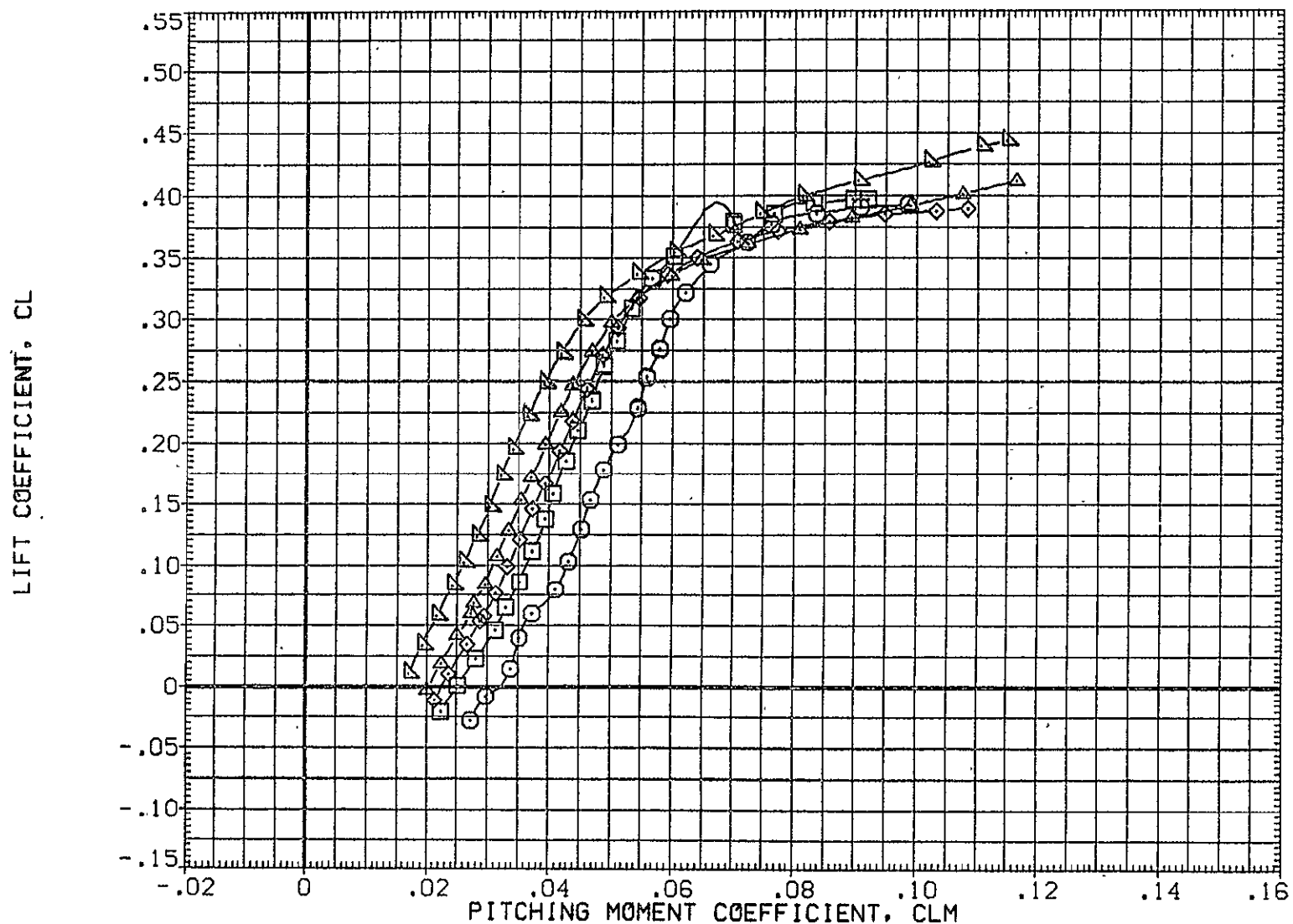


FIG. 79 747+0RB(4 DEG)+TIP FINS, FLAPS UP FERRY(S=-3.2)

0RB

SYMBOL	MACH	PARAMETRIC VALUES			
○	.150	BETA	.000	STAB	-3.200
◇	.300	RUD-U	.000	RUD-L	.000
△	.499	ELV-IB	.000	ELV-OB	3.000
▽	.600	SI-2	.000	S3-4	.000
□	.700	SS-6	.000	IORB	4.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN. X0
YMRP	.0000	IN. Y0
ZMRP	375.0000	IN. Z0
SCALE	.0300	

CARRIER FRL ANGLE OF ATTACK, ALPHAW, DEG.

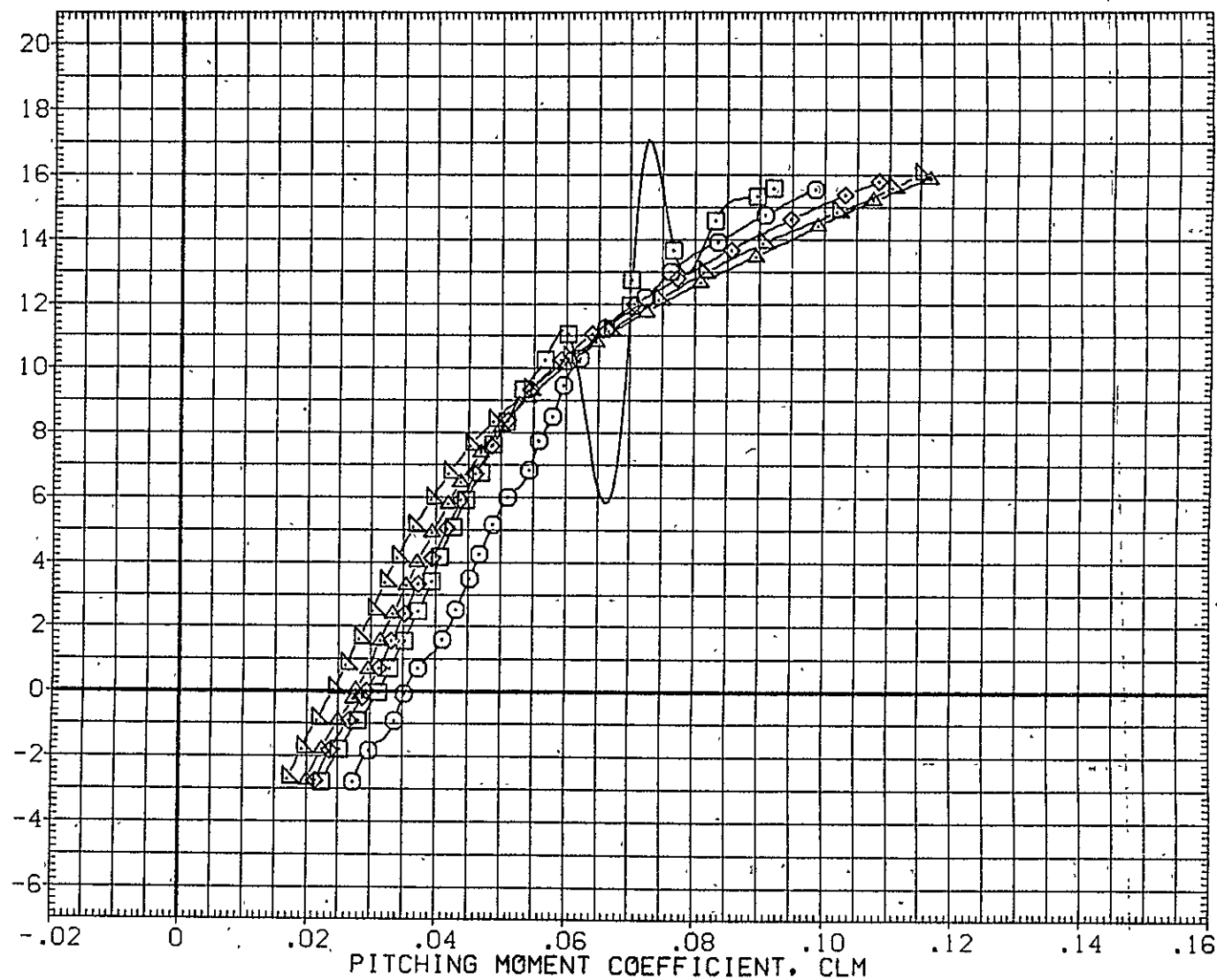


FIG. 79 747+0RB(4 DEG)+TIP FINS, FLAPS UP, FERRY(S=-3.2)

0RB

CA5 K1 F0 H15.6 V9.1 (PLUS. ORB TC5 AT38.3)(RGM116)

SYMBOL
○
□
◇
△

MACH

.300
.500
.600
.700

PARAMETRIC VALUES

BETA	.000	STAB	1.000
RUD-U	.000	RUD-L	.000
ELV-IB	.000	ELV-OB	3.000
S1-2	.000	S3-4	.000
S5-6	.000	IORB	4.000

REFERENCE INFORMATION

SREF	5500.0000	SQ.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

LIFT COEFFICIENT, CL

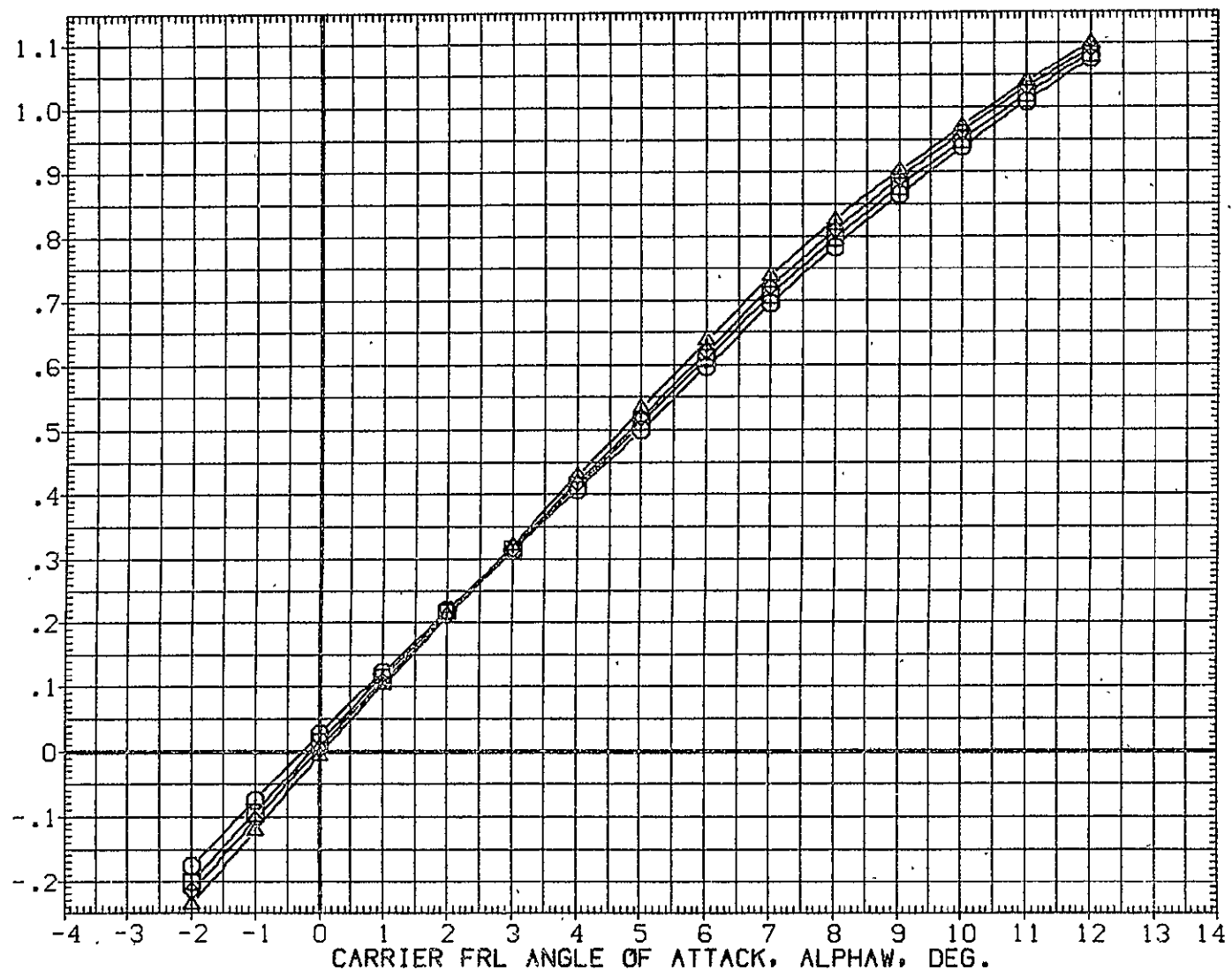


FIG. 80 747+ORB(4 DEG)+TIP FINS, FLAPS UP FERRY(S=+1)

TOTAL

SYMBOL	MACH	PARAMETRIC VALUES			
○	.300	BETA	.000	STAB	1.000
□	.500	RUD-U	.000	RUD-L	.000
◇	.600	ELV-1B	.000	ELV-OB	3.000
△	.700	S1-2	.000	S3-4	.000
		S5-6	.000	IORB	4.000

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

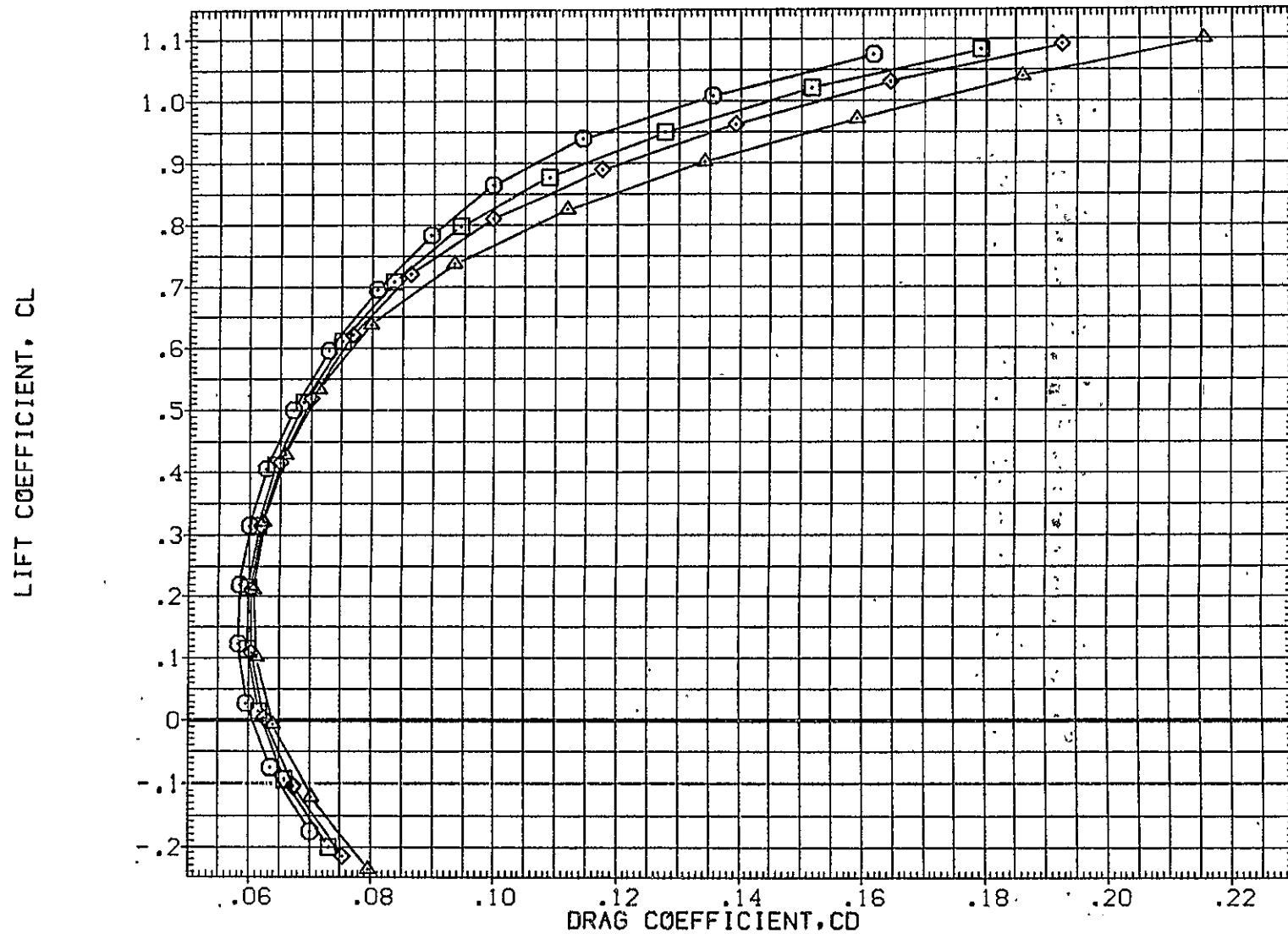


FIG. 80 747+ORB(4 DEG)+TIP FINS, FLAPS UP FERRY(S=+1)

TOTAL

CA5 K1 F0 H15.6 V9.1 (PLUS. ORB TC5 AT38.3)(RGM116)

SYMBOL	MACH	PARAMETRIC VALUES				REFERENCE INFORMATION		
○	.300	BETA	.000	STAB	1.000	SREF	5500.0000	SQ.FT.
□	.500	RUD-U	.000	RUD-L	.000	LREF	327.8000	IN.
◇	.600	ELV-IB	.000	ELV-OB	3.000	BREF	2348.0000	IN.
△	.700	S1-2	.000	S3-4	.000	XMRP	1339.9100	IN. XC
		S5-6	.000	ICRB	4.000	YMRP	.0000	IN. YC
						ZMRP	190.7500	IN. ZC
						SCALE	.0300	

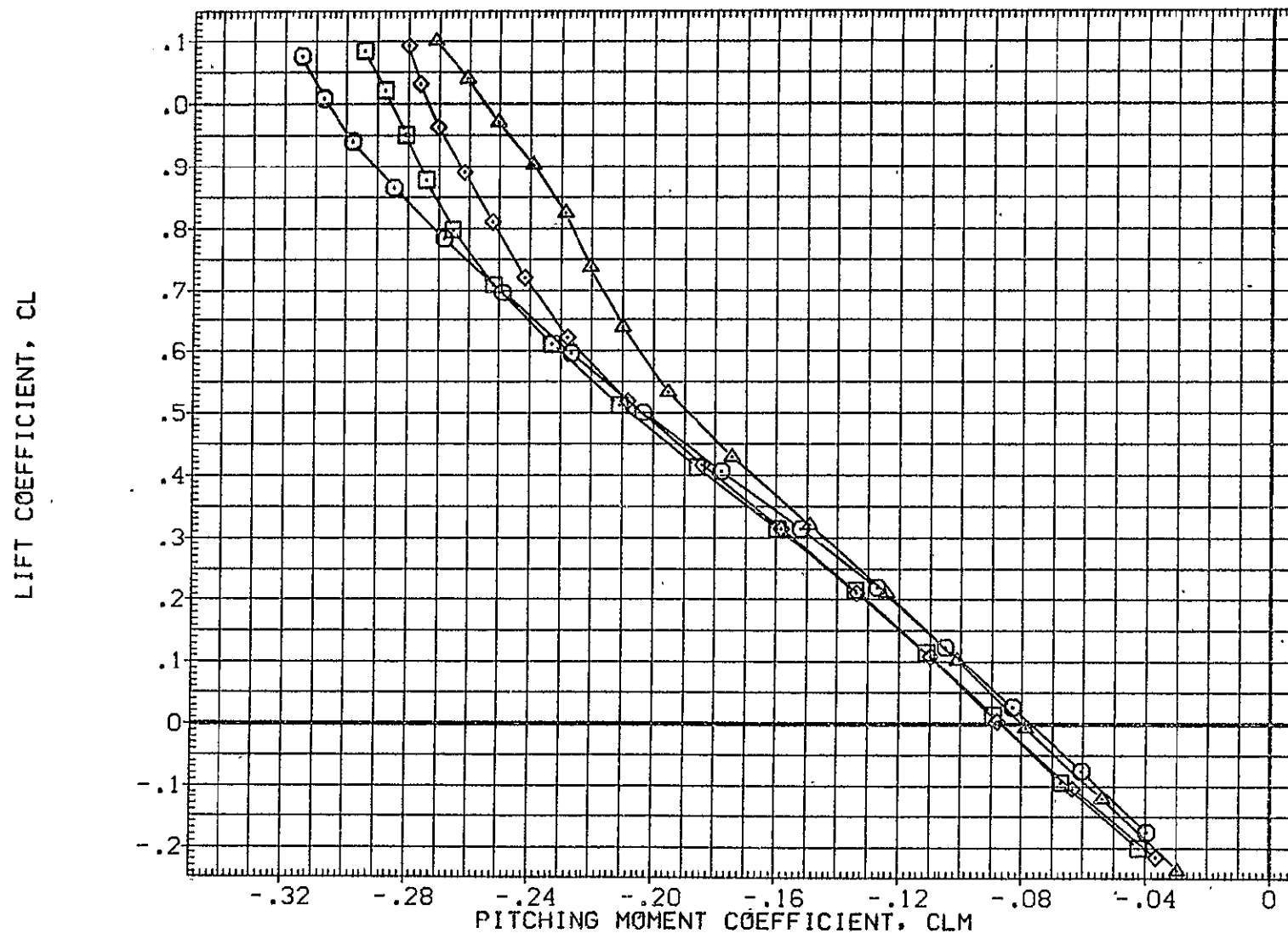


FIG. 80 747+ORB(4 DEG)+TIP FINS, FLAPS UP FERRY(S=+1)

TOTAL

SYMBOL	MACH	PARAMETRIC VALUES				REFERENCE INFORMATION		
		BETA	.000	STAB	1.000	SREF	5500.0000	SQ.FT.
○	.300	RUD-U	.000	RUD-L	.000	LREF	327.8000	IN.
□	.500	ELV-18	.000	ELV-08	3.000	BREF	2348.0000	IN.
◇	.600	S1-2	.000	S3-4	.000	XMRP	1339.9100	IN. XC
△	.700	S5-6	.000	10RB	4.000	YMRP	.0000	IN. YC
						ZMRP	190.7500	IN. ZC
						SCALE	.0300	

CARRIER FRL ANGLE OF ATTACK, ALPHAW, DEG.

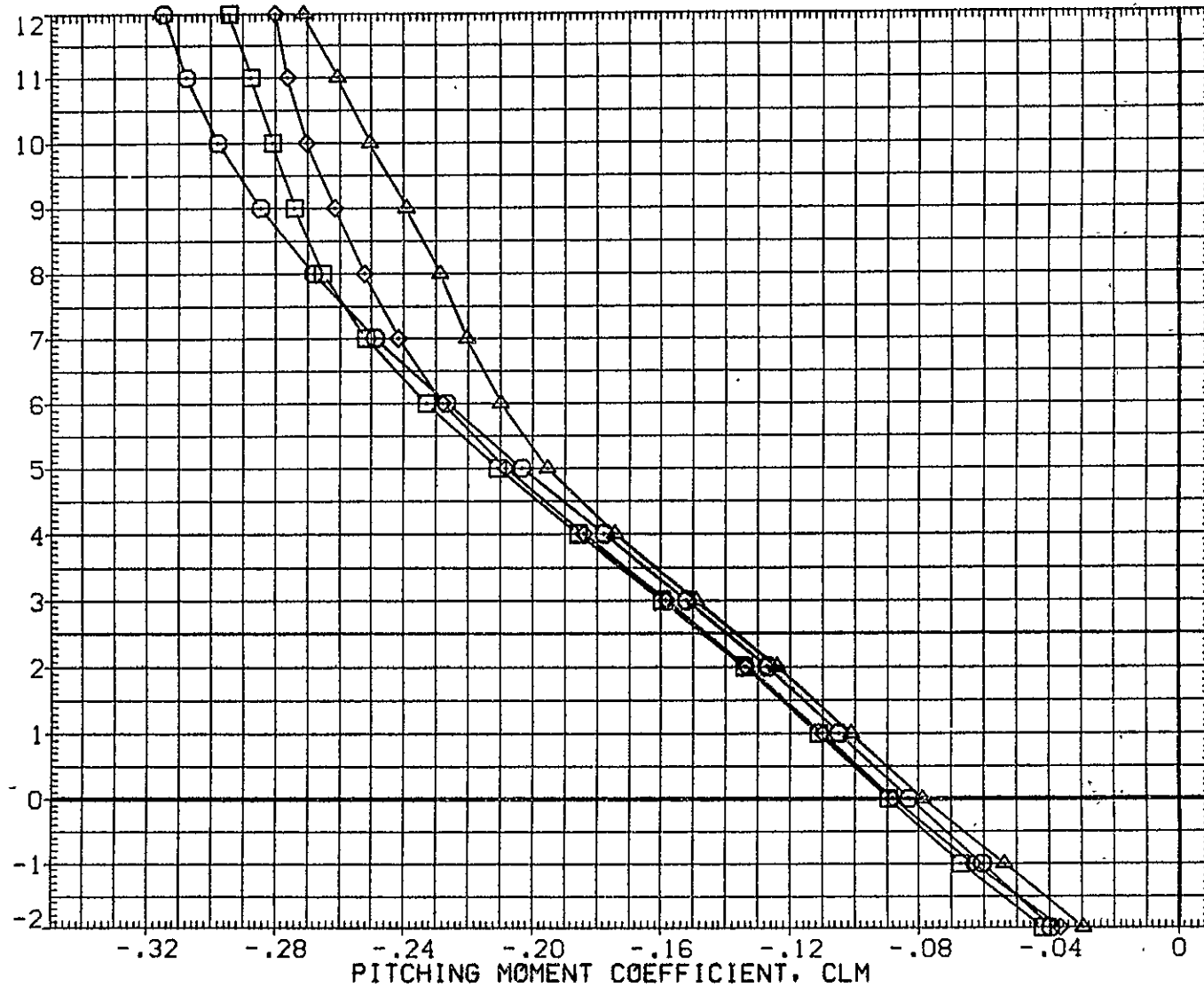


FIG. 80 747+0RB(4 DEG)+TIP FINS, FLAPS UP FERRY(S=+1)

CA5 K1 FO H15.6 V9.1 MINUS ORB TC5 AT38.3 (BGM116)

SYMBOL	MACH	PARAMETRIC VALUES			
○	.300	BETA	.000	STAB	1.000
□	.500	RUD-U	.000	RUD-L	.000
◇	.600	ELV-1B	.000	ELV-0B	3.000
△	.700	S1-2	.000	S3-4	.000
		S5-6	.000	ICRB	4.000

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

INCREMENTAL LIFT FORCE COEFFICIENT(STABILITY AXIS), DCL

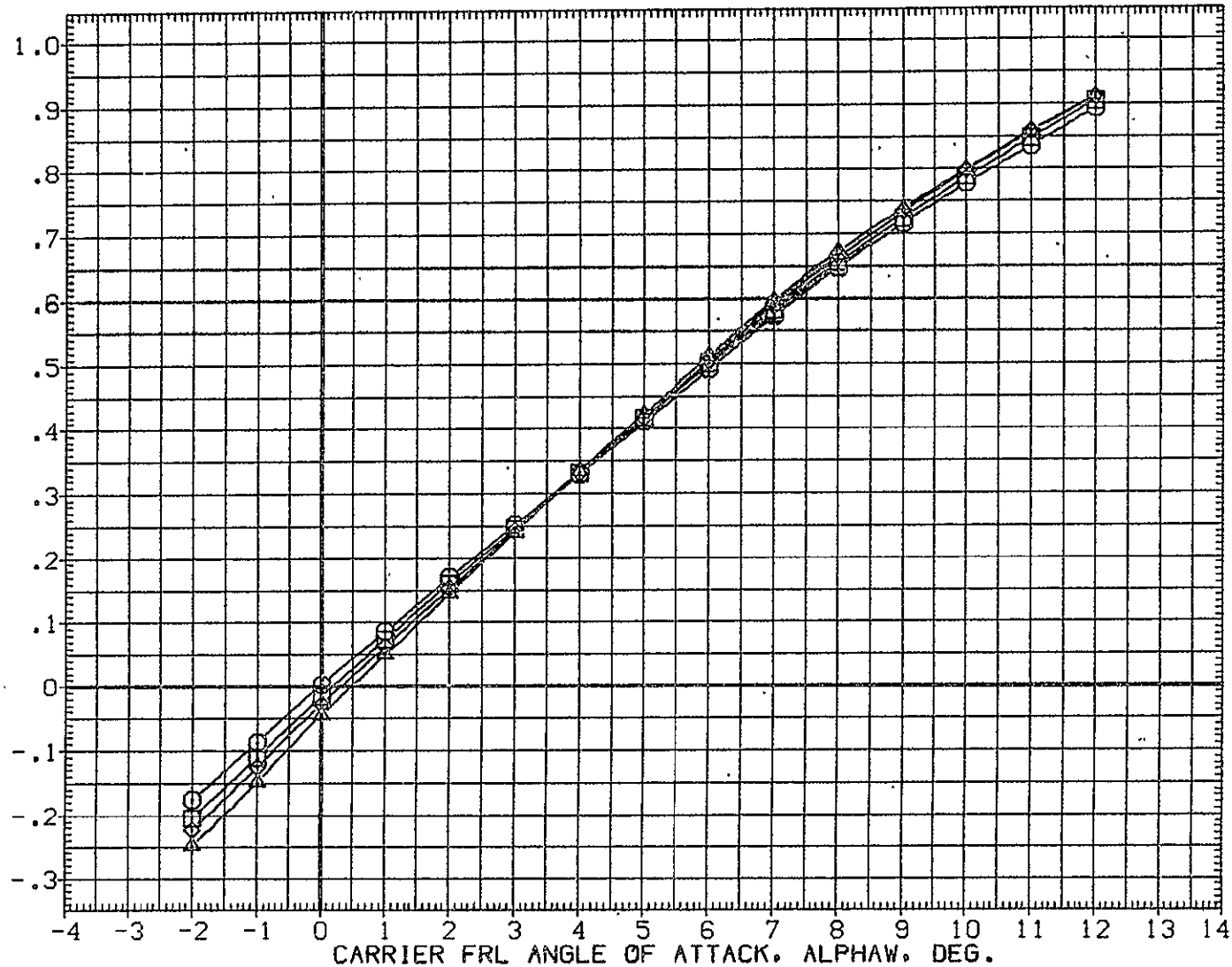


FIG. 81 747+ORB(4 DEG)+TIP FINS, FLAPS UP FERRY(S=+1)

747

SYMBOL	MACH	PARAMETRIC VALUES				REFERENCE INFORMATION		
○	.300	BETA	.000	STAB	1.000	SREF	5500.0000	SQ.FT.
□	.500	RUD-U	.000	RUD-L	.000	LREF	327.8000	IN.
◇	.600	ELV-1B	.000	ELV-0B	3.000	BREF	2348.0000	IN.
△	.700	S1-2	.000	S3-4	.000	XMRP	1339.9100	IN. XC
		S5-6	.000	ICRB	4.000	YMRP	.0000	IN. YC
						ZMRP	190.7500	IN. ZC
						SCALE	.0300	

INCREMENTAL LIFT FORCE COEFFICIENT(STABILITY AXIS), DCL

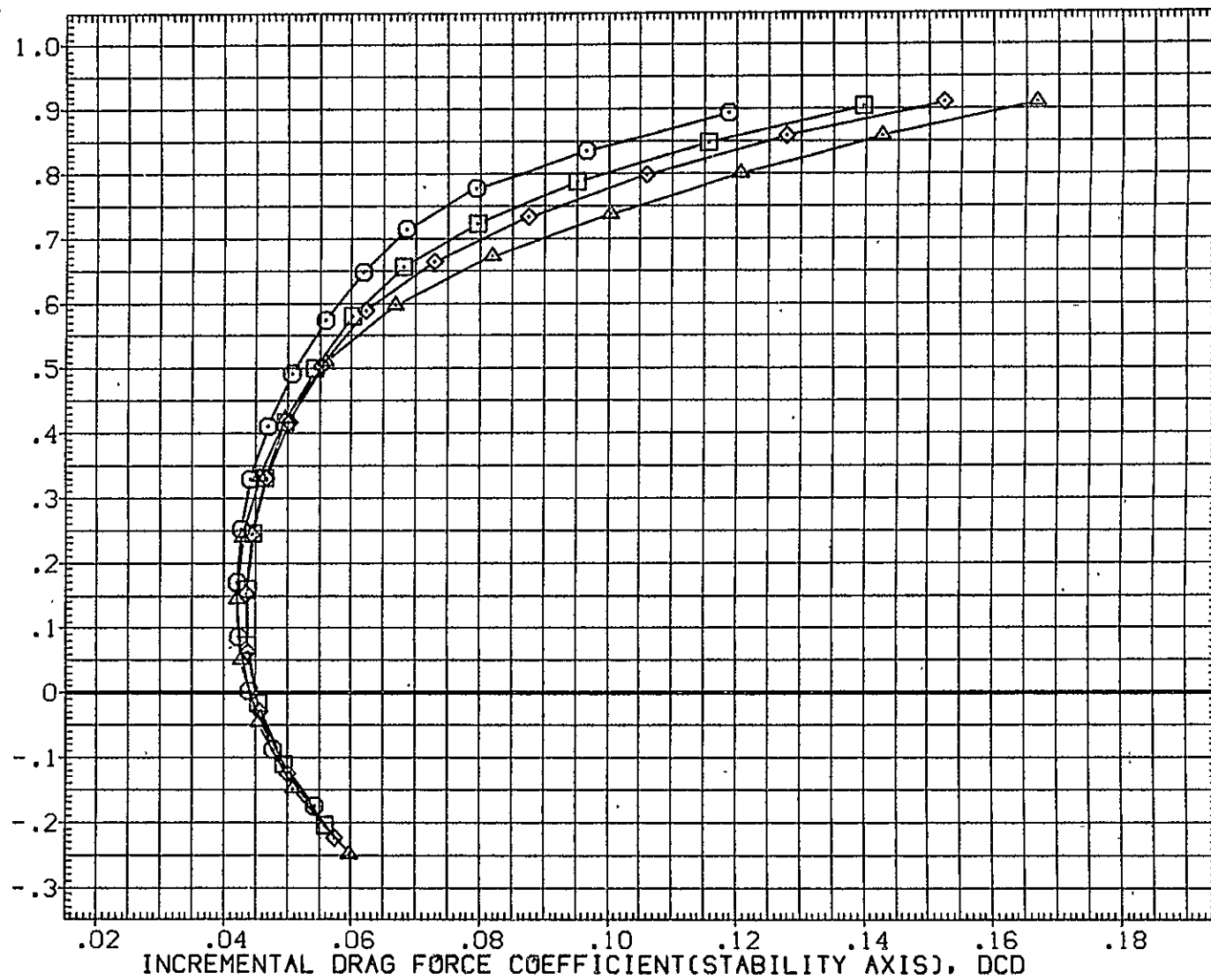


FIG. 81 747+ORB(4 DEG)+TIP FINS, FLAPS UP FERRY(S=+1)

CA5 K1 FO H15.6 V9.1 MINUS ORB TC5 AT38.3 (BGM116)

SYMBOL	MACH	PARAMETRIC VALUES			
○	.300	BETA	.000	STAB	1.000
□	.500	RUD-U	.000	RUD-L	.000
◇	.600	ELV-1B	.000	ELV-0B	3.000
△	.700	S1-2	.000	S3-4	.000
		S5-6	.000	10RB	4.000

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

INCREMENTAL LIFT FORCE COEFFICIENT(STABILITY AXIS), DCL

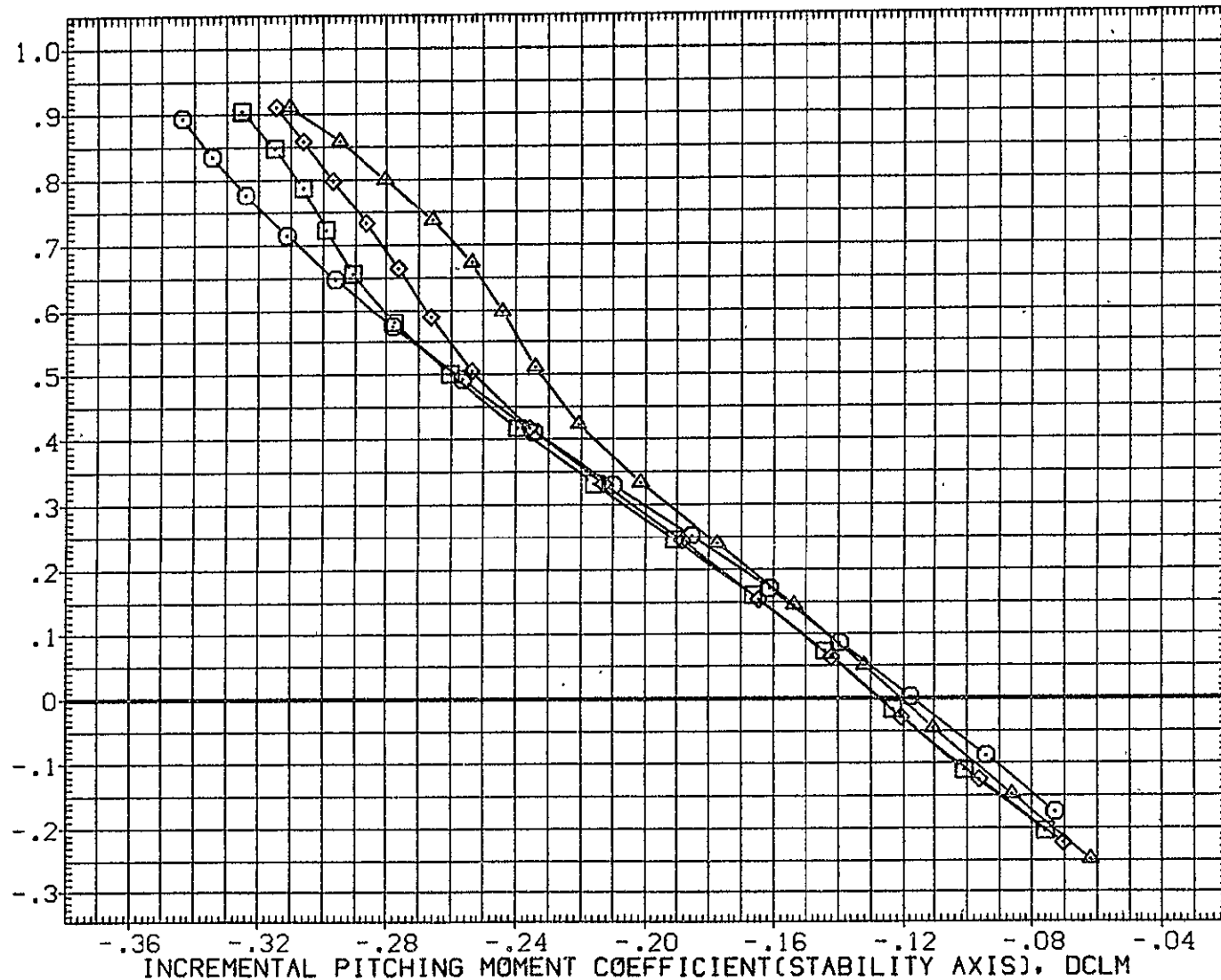


FIG. 81 747+ORB(4 DEG)+TIP FINS, FLAPS UP FERRY(S=+1)

747

SYMBOL	MACH	PARAMETRIC VALUES			
○	.300	BETA	.000	STAB	1.000
□	.500	RUD-U	.000	RUD-L	.000
◇	.600	ELV-1B	.000	ELV-0B	3.000
△	.700	S1-2	.000	S3-4	.000
		S5-6	.000	ICRB	4.000

REFERENCE INFORMATION		
SREF	5500.0000	50.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

CARRIER FRL ANGLE OF ATTACK. ALPHAW. DEG.

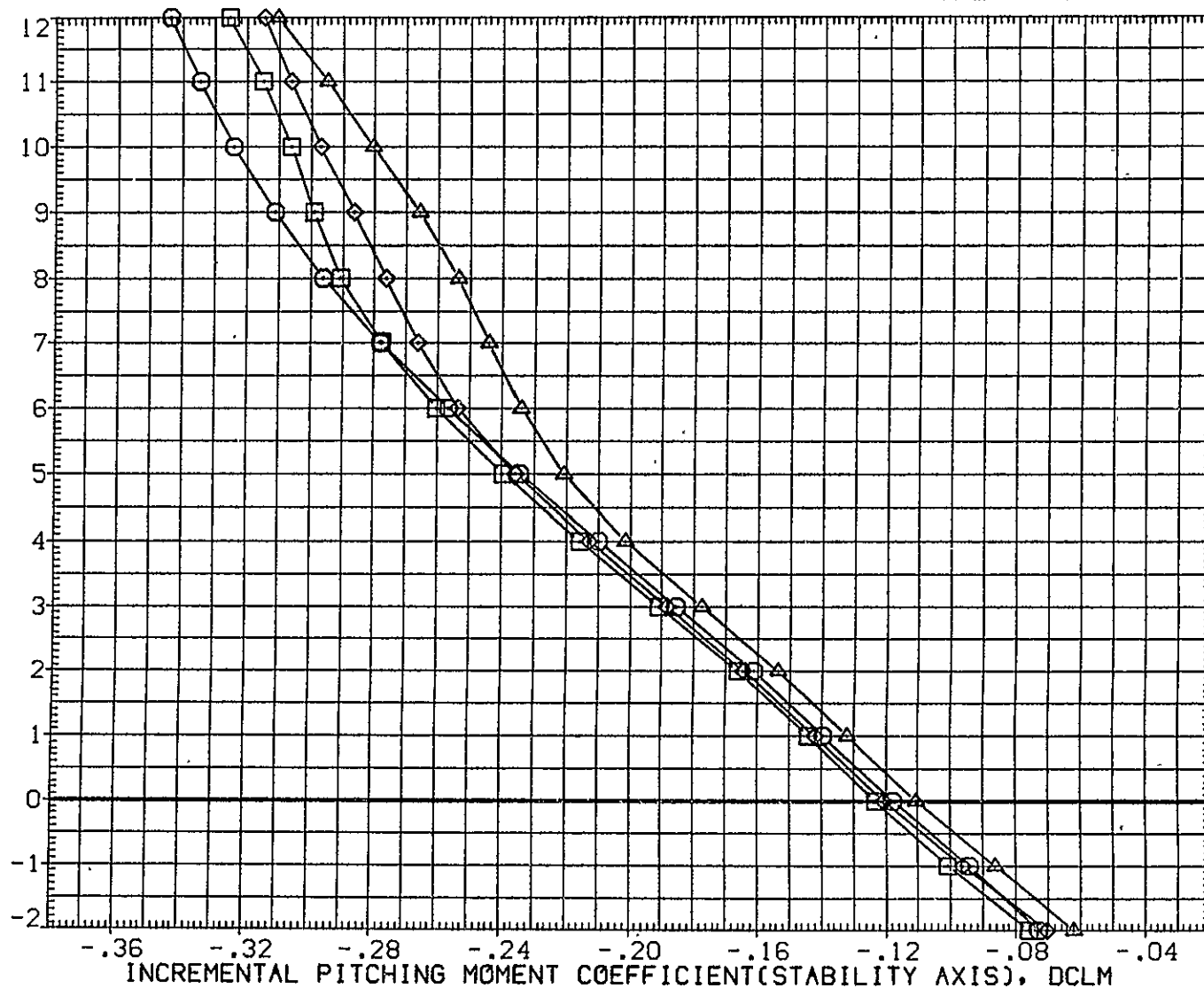


FIG. 81 747+ORB(4 DEG)+TIP FINS, FLAPS UP FERRY(S=+1)

747

CA5 0RB TC5 AT38.3 (PRES. K1 FO H15.6 V9.1)(YGM116)

SYMBOL

○
□
◇
△

MACH

.300
.500
.600
.700

BETA
RUD-U
ELV-1B
S1-2
SS-6

PARAMETRIC VALUES

.000 STAB 1.000
.000 RUD-L .000
.000 ELV-0B 3.000
.000 S3-4 .000
.000 10RB 4.000

REFERENCE INFORMATION

SREF 2690.0000 SQ.FT.
LREF 474.8100 IN.
BREF 936.6800 IN.
XMRP 1109.0000 IN. X0
YMRP .0000 IN. Y0
ZMRP 375.0000 IN. Z0
SCALE .0300

LIFT COEFFICIENT, CL

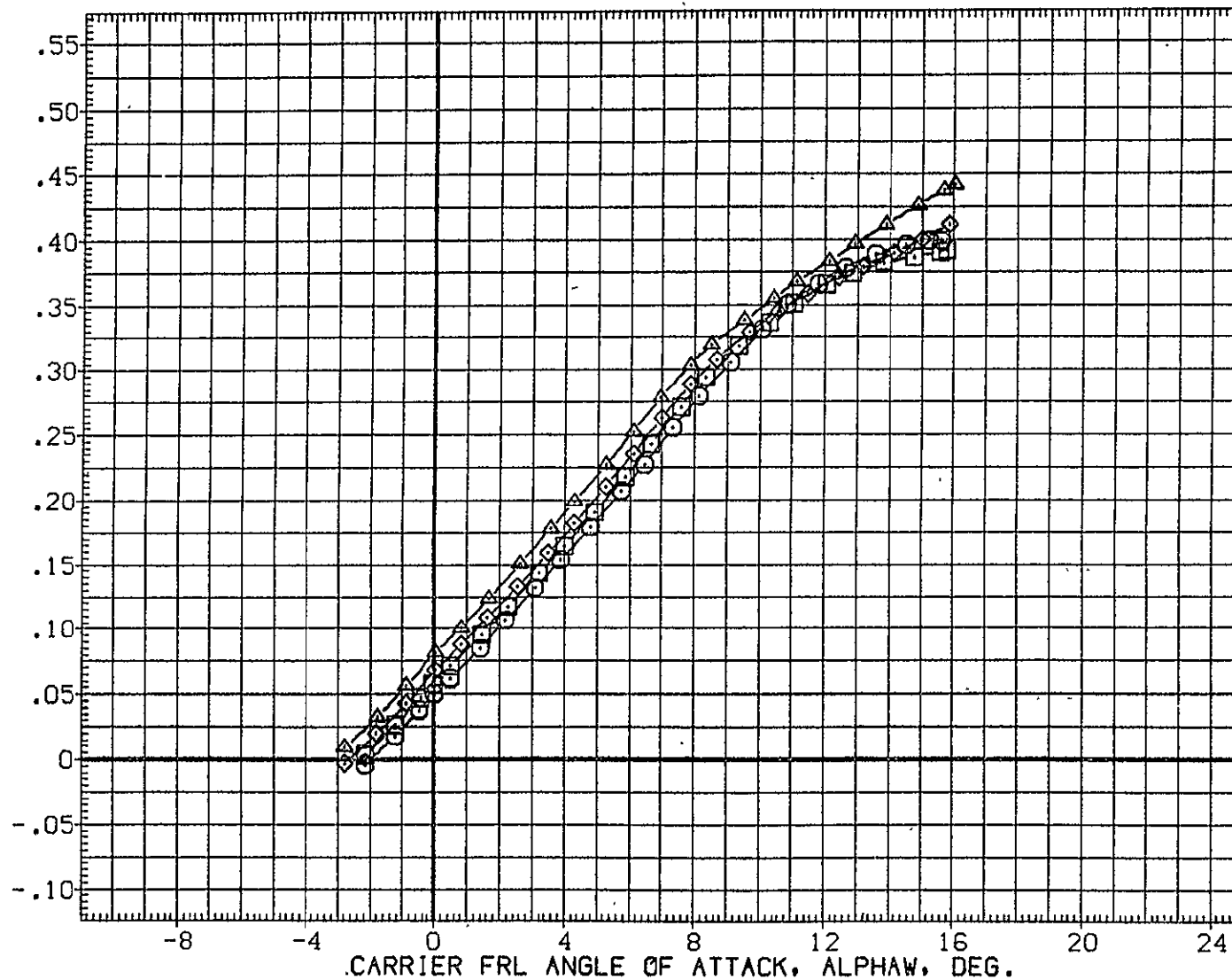


FIG. 82 747+0RB(4 DEG)+TIP FINS, FLAPS UP FERRY(S=+1)

0RB

SYMBOL	MACH	PARAMETRIC VALUES			
○	.300	BETA	.000	STAB	1.000
□	.500	RUD-U	.000	RUD-L	.000
◇	.600	ELV-1B	.000	ELV-0B	3.000
△	.700	S1-2	.000	S3-4	.000
		S5-6	.000	IORB	4.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN. X0
YMRP	.0000	IN. Y0
ZMRP	375.0000	IN. Z0
SCALE	.0300	

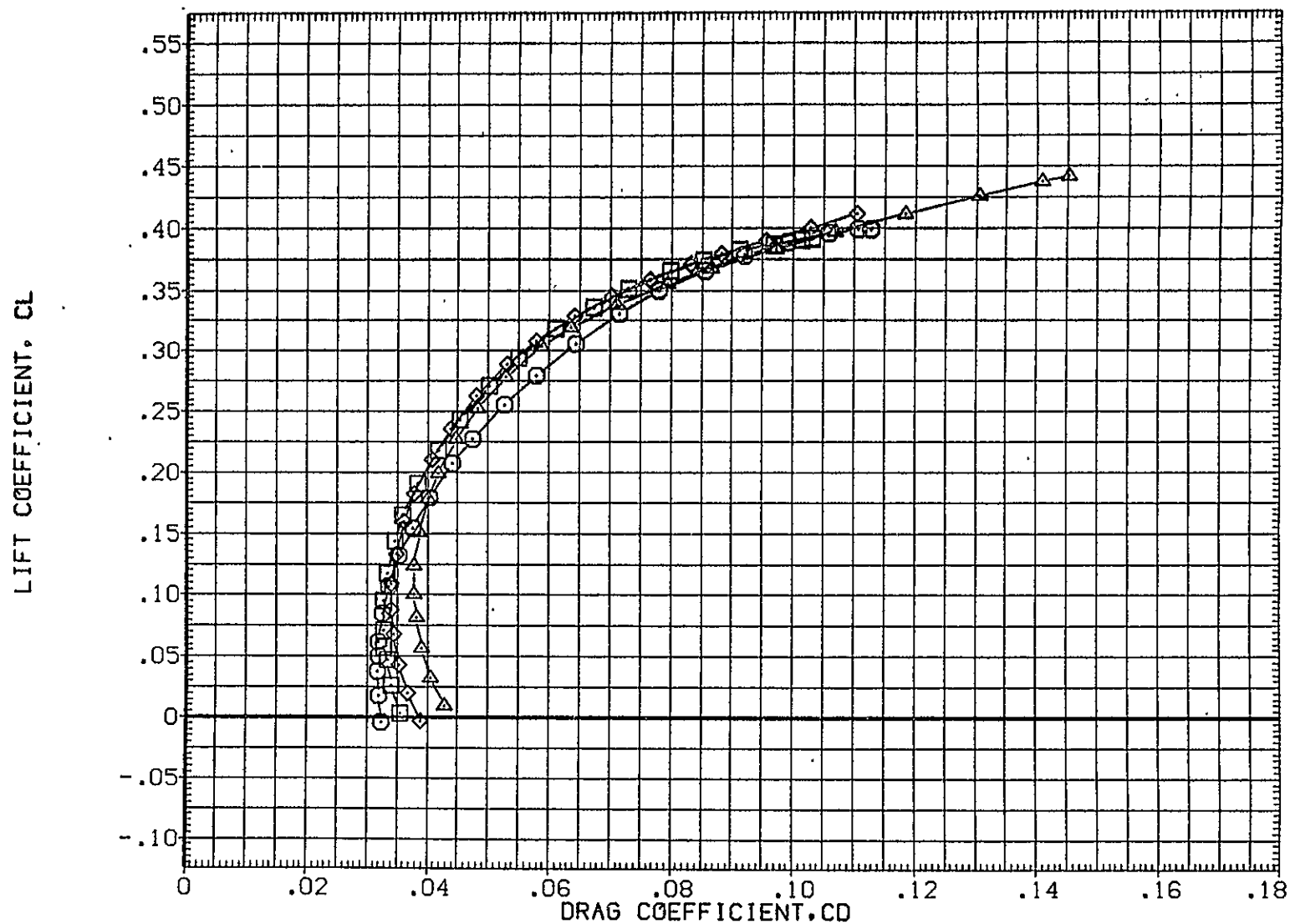


FIG. 82 747+ORB(4 DEG)+TIP FINS, FLAPS UP FERRY(S=+1)

ORB

CA5 0RB TC5 AT38.3 (PRES. K1 FO H15.6 V9.1)(YGM116)

SYMBOL
○
□
◇
△

MACH

BETA
RUD-U
ELV-1B
S1-2
S5-6

PARAMETRIC VALUES

.000 STAB 1.000
.000 RUD-L .000
.000 ELV-0B 3.000
.000 S3-4 .000
.000 IORB 4.000

REFERENCE INFORMATION

SREF 2690.0000 SQ.FT.
LREF 474.8100 IN.
BREF 936.6800 IN.
XMRP 1109.0000 IN. X0
YMRP .0000 IN. Y0
ZMRP 375.0000 IN. Z0
SCALE .0300

LIFT COEFFICIENT, CL

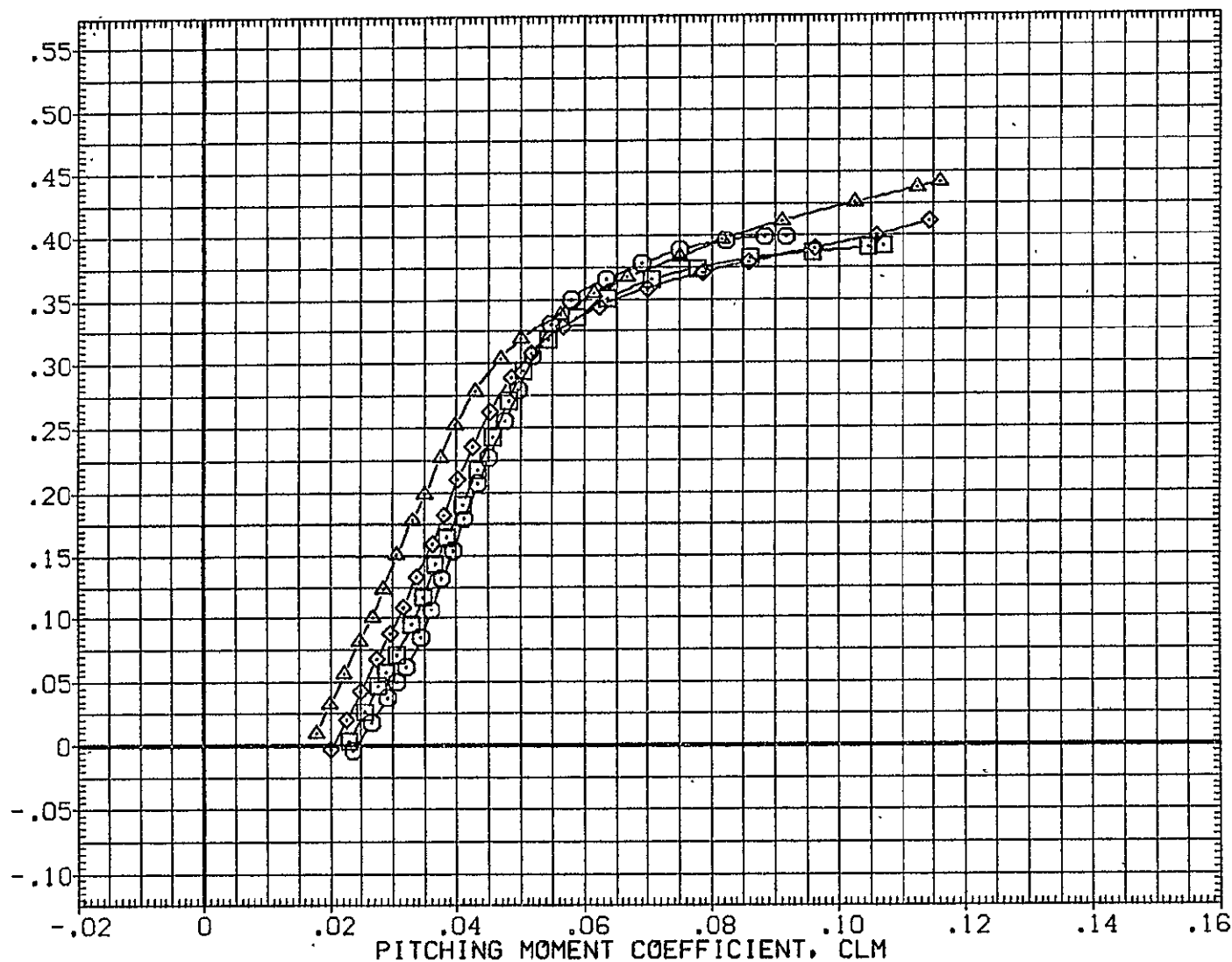


FIG. 82 747+0RB(4 DEG)+TIP FINS, FLAPS UP FERRY(S=+1)

0RB

SYMBOL	MACH	PARAMETRIC VALUES			
○	.300	BETA	.000	STAB	1.000
□	.500	RUD-U	.000	RUD-L	.000
◇	.600	ELV-1B	.000	ELV-0B	3.000
△	.700	S1-2	.000	S3-4	.000
		S5-6	.000	IORB	4.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.F.T.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN. X0
YMRP	.0000	IN. Y0
ZMRP	375.0000	IN. Z0
SCALE	.0300	

CARRIER FRL ANGLE OF ATTACK, ALPHA, DEG.

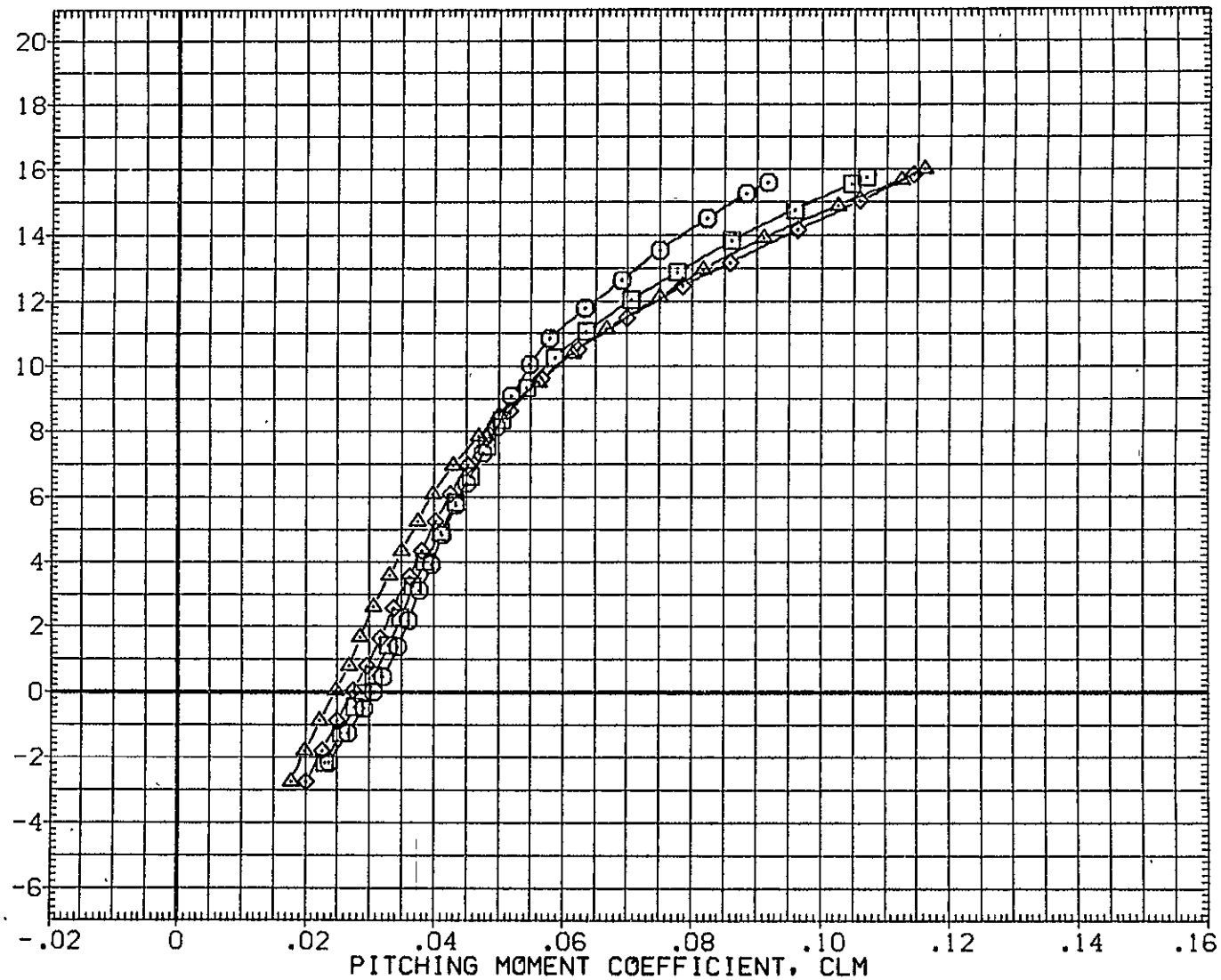


FIG. 82 747+ORB(4 DEG)+TIP FINS, FLAPS UP FERRY(S=+1)

ORB

CA5 .K1 F0 H15.6 V9.1 (PLUS. 0RB TC5 AT38.3)(RGM117)

SYMBOL	MACH	PARAMETRIC VALUES				REFERENCE INFORMATION		
○	.150	BETA	.000	STAB	-2.000	SREF	5500.0000	SQ.FT.
□	.300	RUD-U	.000	RUD-L	.000	LREF	327.8000	IN.
◇	.500	ELV-1B	.000	ELV-0B	3.000	BREF	2348.0000	IN.
△	.600	S1-2	.000	S3-4	.000	XMRP	1339.9100	IN. XC
▽	.700	S5-6	.000	10RB	4.000	YMRP	.0000	IN. YC
						ZMRP	190.7500	IN. ZC
						SCALE	.0300	

LIFT COEFFICIENT, CL

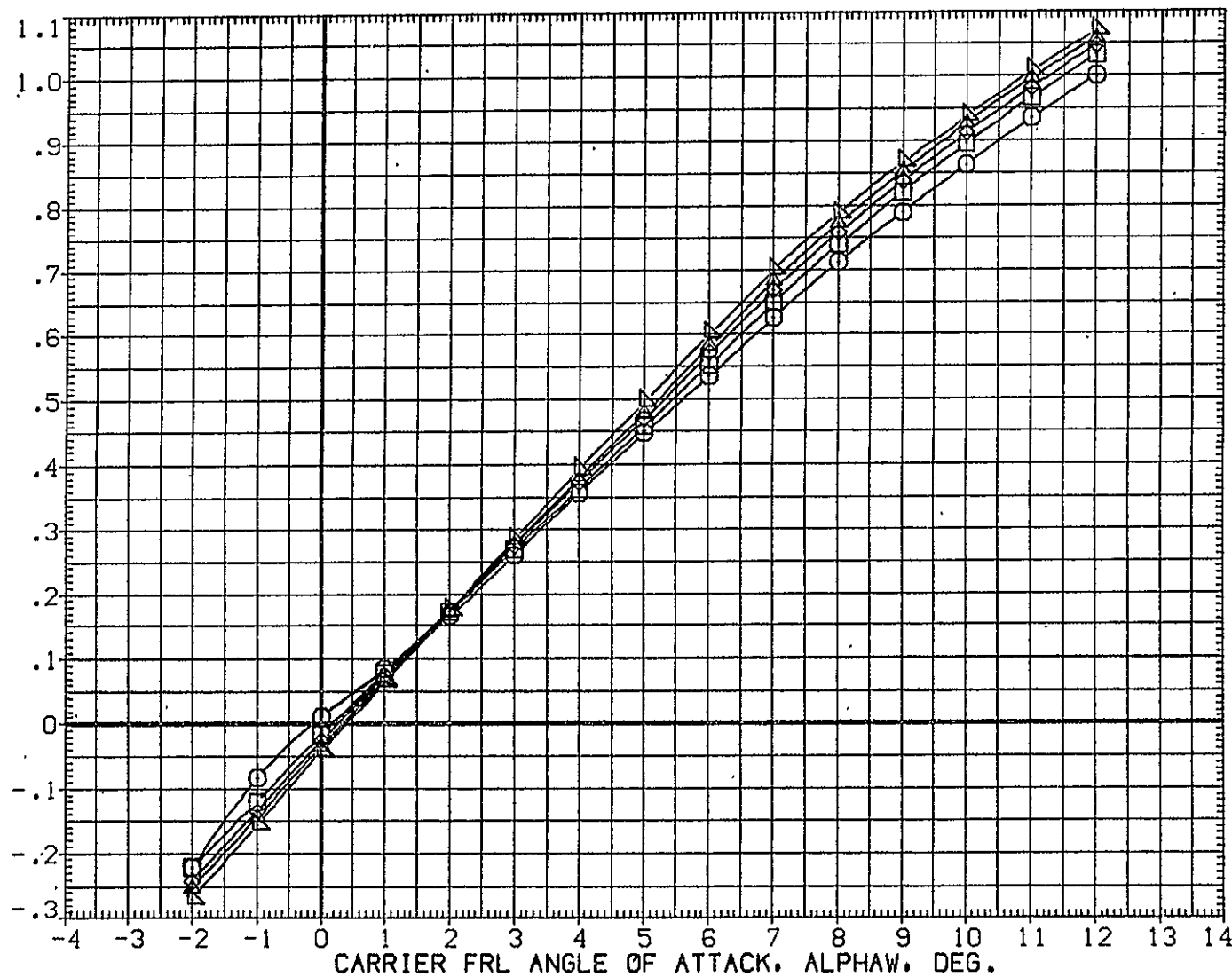


FIG. 83 747+0RB(4 DEG)+TIP FINS, FLAPS UP FERRY, BASELINE, (S=-2)

TOTAL

SYMBOL
 ○
 □
 ◇
 △
 ▽

MACH	PARAMETRIC VALUES			
.150	BETA	.000	STAB	-2.000
.300	RUD-U	.000	RUD-L	.000
.500	ELV-IB	.000	ELV-OB	3.000
.600	S1-2	.000	S3-4	.000
.700	S5-6	.000	IORB	4.000

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

LIFT COEFFICIENT, CL

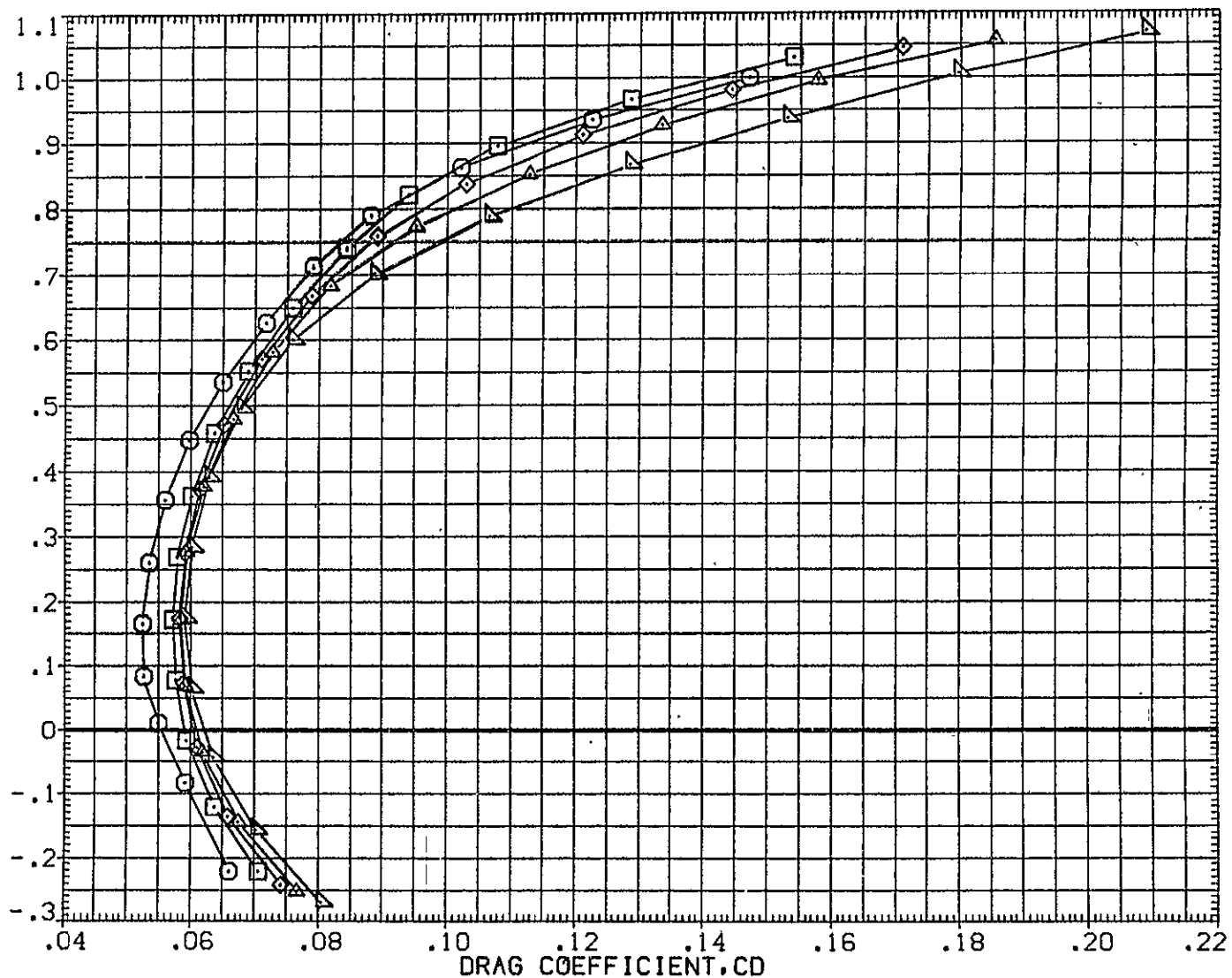


FIG. 83 747+0RB(4 DEG)+TIP FINS, FLAPS UP FERRY, BASELINE, (S=-2)

TOTAL

CA5 K1 F0 H15.6 V9.1 (PLUS. ORB TC5 AT38.3)(RGM117)

SYMBOL	MACH	PARAMETRIC VALUES				REFERENCE INFORMATION		
○	.150	BETA	.000	STAB	-2.000	SREF	5500.0000	SQ.FT.
□	.300	RUD-U	.000	RUD-L	.000	LREF	327.8000	IN.
◇	.500	ELV-18	.000	ELV-08	3.000	BREF	2348.0000	IN.
△	.600	S1-2	.000	S3-4	.000	XMRP	1339.9100	IN. XC
▽	.700	S5-6	.000	10RB	4.000	YMRP	.0000	IN. YC
						ZMRP	190.7500	IN. ZC
						SCALE	.0300	

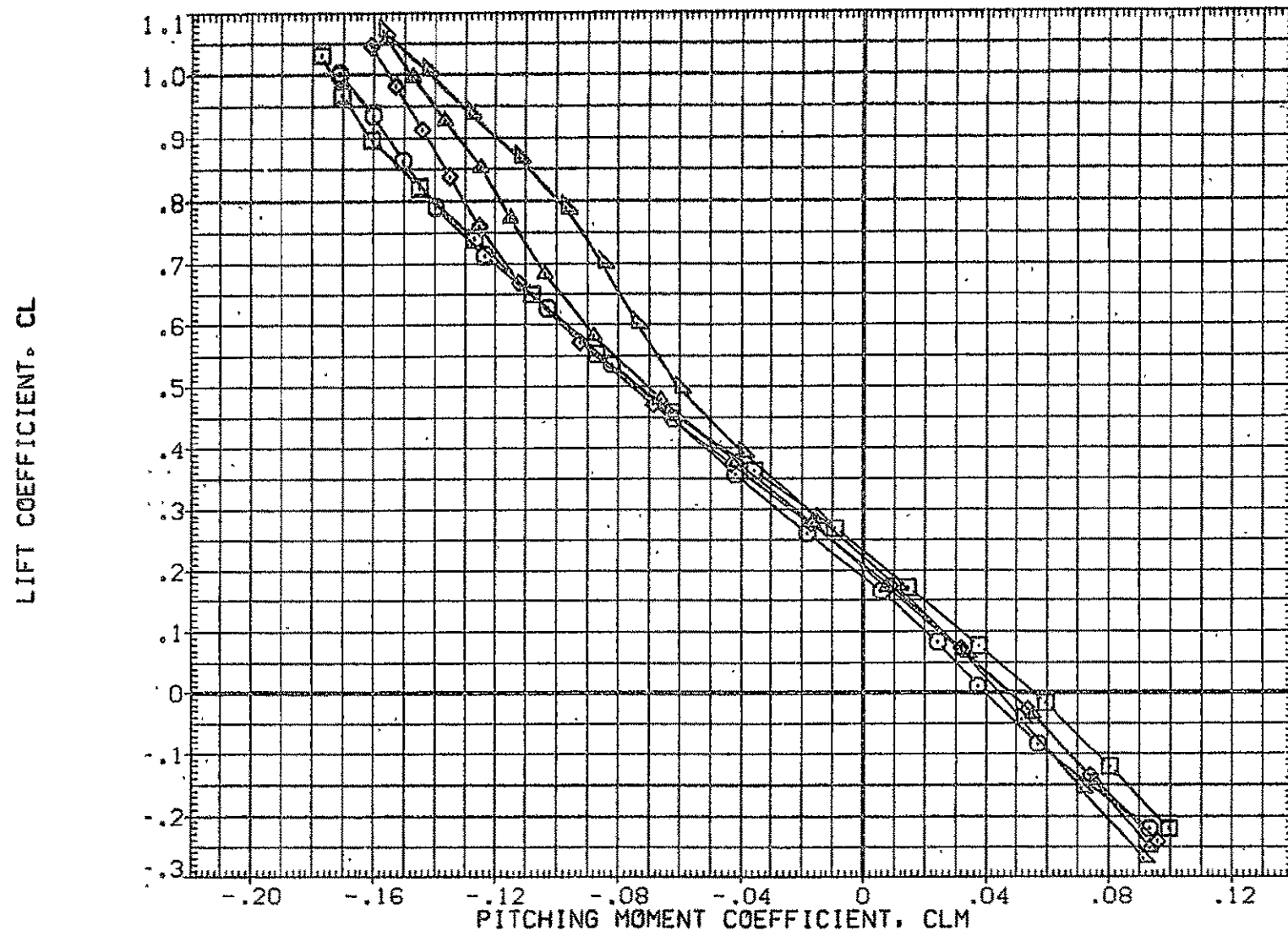


FIG. 83 747+0RB(4 DEG)+TIP FINS, FLAPS UP FERRY, BASELINE, (S=-2)

SYMBOL	MACH	PARAMETRIC VALUES				REFERENCE INFORMATION		
○	.150	BETA	.000	STAB	-2.000	SREF	5500.0000	SQ.FT.
□	.300	RUD-U	.000	RUD-L	.000	LREF	327.8000	IN.
◇	.500	ELV-1B	.000	ELV-0B	3.000	BREF	2348.0000	IN.
△	.600	S1-2	.000	S3-4	.000	XMRP	1339.9100	IN. XC
▽	.700	S5-6	.000	10RB	4.000	YMRP	.0000	IN. YC
						ZMRP	190.7500	IN. ZC
						SCALE	.0300	

CARRIER FRL ANGLE OF ATTACK, ALPHAW, DEG.

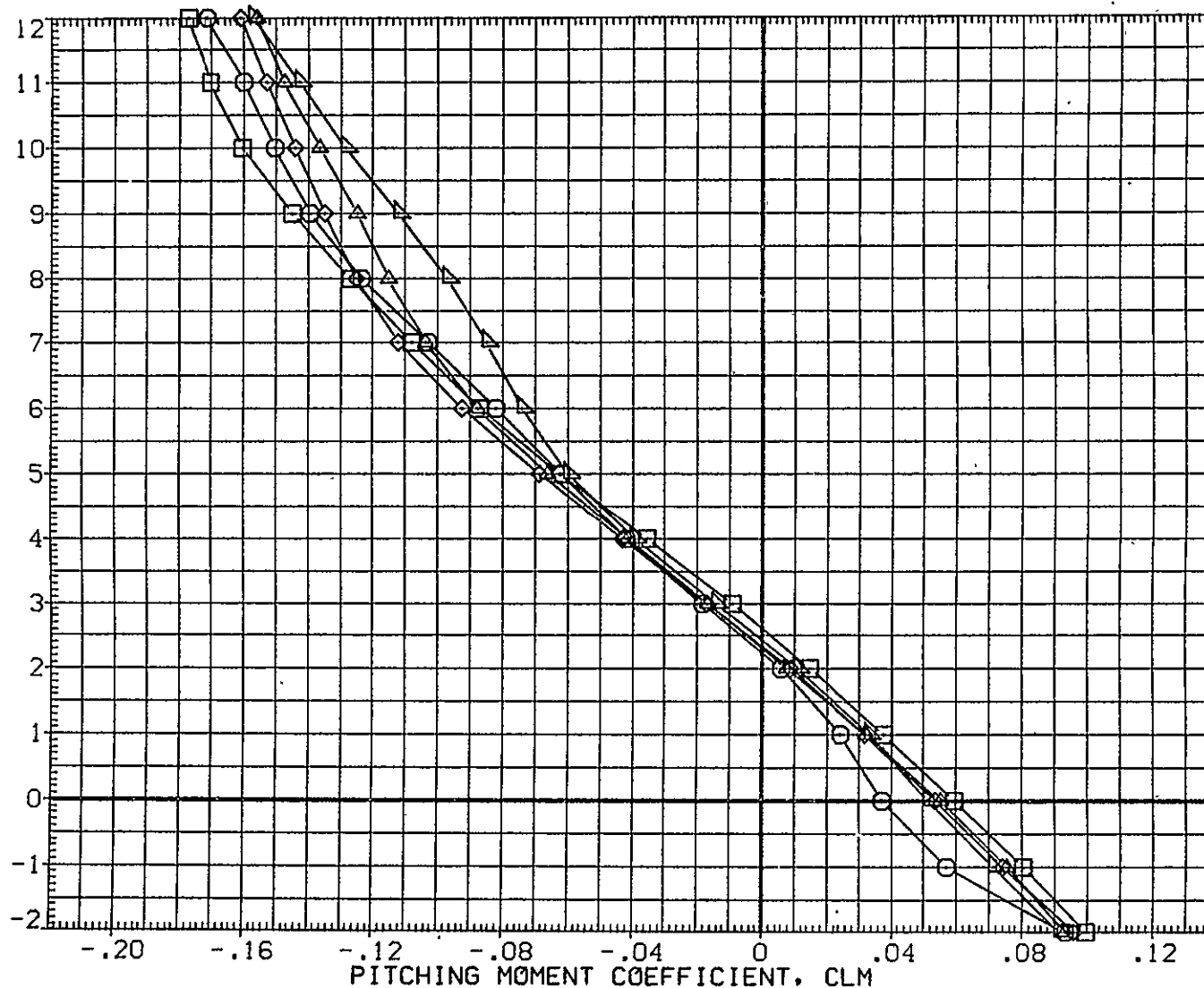


FIG. 83 747+ORB(4 DEG)+TIP FINS, FLAPS UP FERRY, BASELINE, (S=-2)

TOTAL

CA5 K1 F0 H15.6 V9.1 MINUS 0RB TC5 AT38.3 (BGM117)

SYMBOL
○
□
◇
△
▽

MACH	PARAMETRIC VALUES			
.150	BETA	.000	STAB	-2.000
.300	RUD-U	.000	RUD-L	.000
.500	ELV-IB	.000	ELV-OB	3.000
.600	S1-2	.000	S3-4	.000
.700	S5-6	.000	IORB	4.000

REFERENCE INFORMATION		
SREF	5500.0000	50. FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

INCREMENTAL LIFT FORCE COEFFICIENT(STABILITY AXIS), DCL

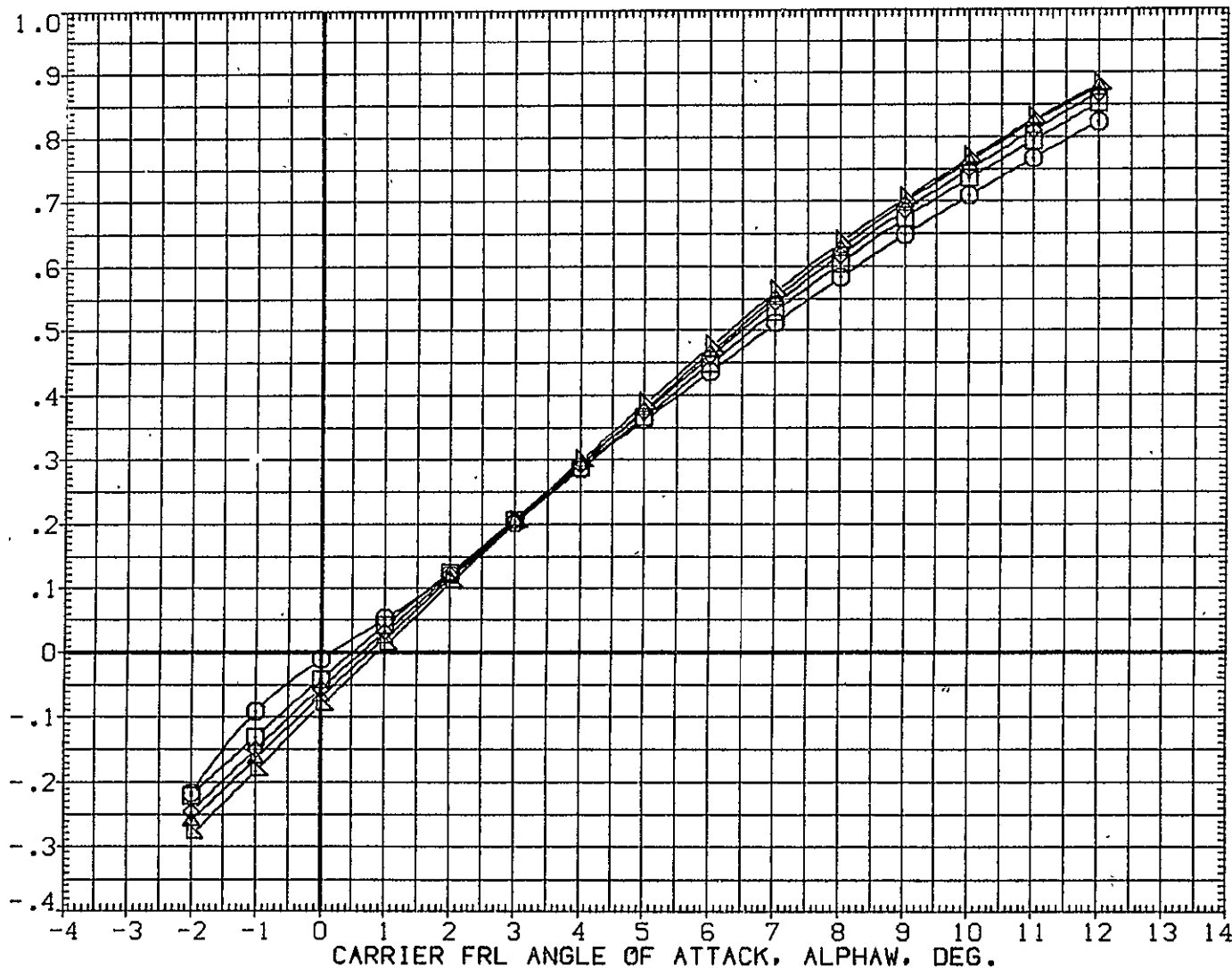


FIG. 84 747+0RB(4 DEG)+TIP FINS, FLAPS UP FERRY, BASELINE, (S=-2)

747

SYMBOL	MACH	PARAMETRIC VALUES			
○	.150	BETA	.000	STAB	-2.000
□	.300	RUD-U	.000	RUD-L	.000
◇	.500	ELV-1B	.000	ELV-OB	3.000
△	.600	S1-2	.000	S3-4	.000
▽	.700	S5-6	.000	IORB	4.000

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

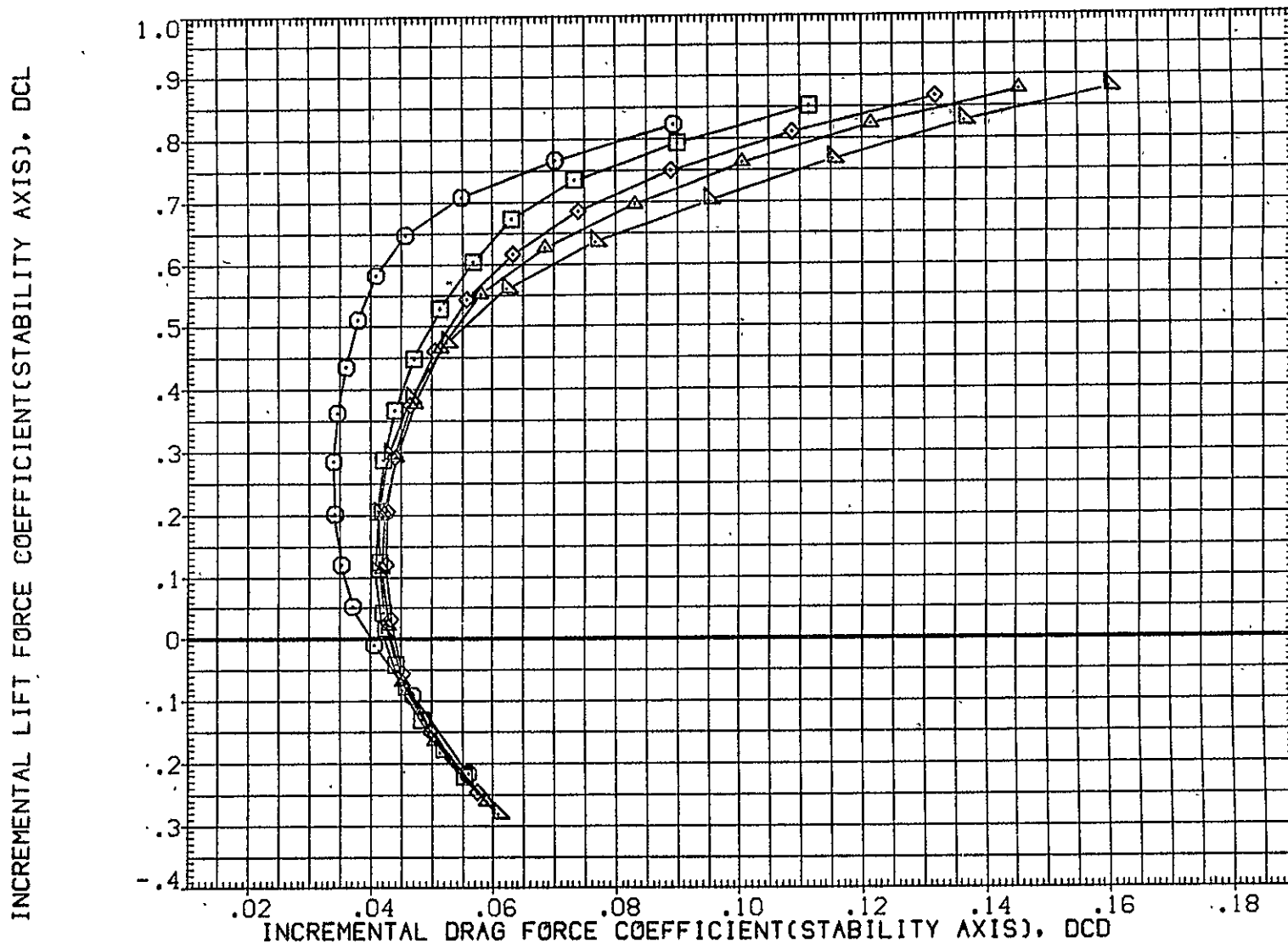


FIG. 84 747+ORB(4 DEG)+TIP FINS, FLAPS UP FERRY, BASELINE, (S=-2)

747

CA5 K1 F0 H15.6 V9.1 MINUS ORB TC5 AT38.3 (BGM117)

SYMBOL	MACH	PARAMETRIC VALUES				REFERENCE INFORMATION	
○	.150	BETA	.000	STAB	-2.000	SREF	5500.0000 SQ.FT.
□	.300	RUD-U	.000	RUD-L	.000	LREF	327.8000 IN.
◇	.500	ELV-1B	.000	ELV-0B	3.000	BREF	2348.0000 IN.
△	.600	S1-2	.000	S3-4	.000	XMRP	1339.9100 IN. XC
▽	.700	S5-6	.000	ICRB	4.000	YMRP	.0000 IN. YC
						ZMRP	190.7500 IN. ZC
						SCALE	.0300

INCREMENTAL LIFT FORCE COEFFICIENT(STABILITY AXIS), DCL

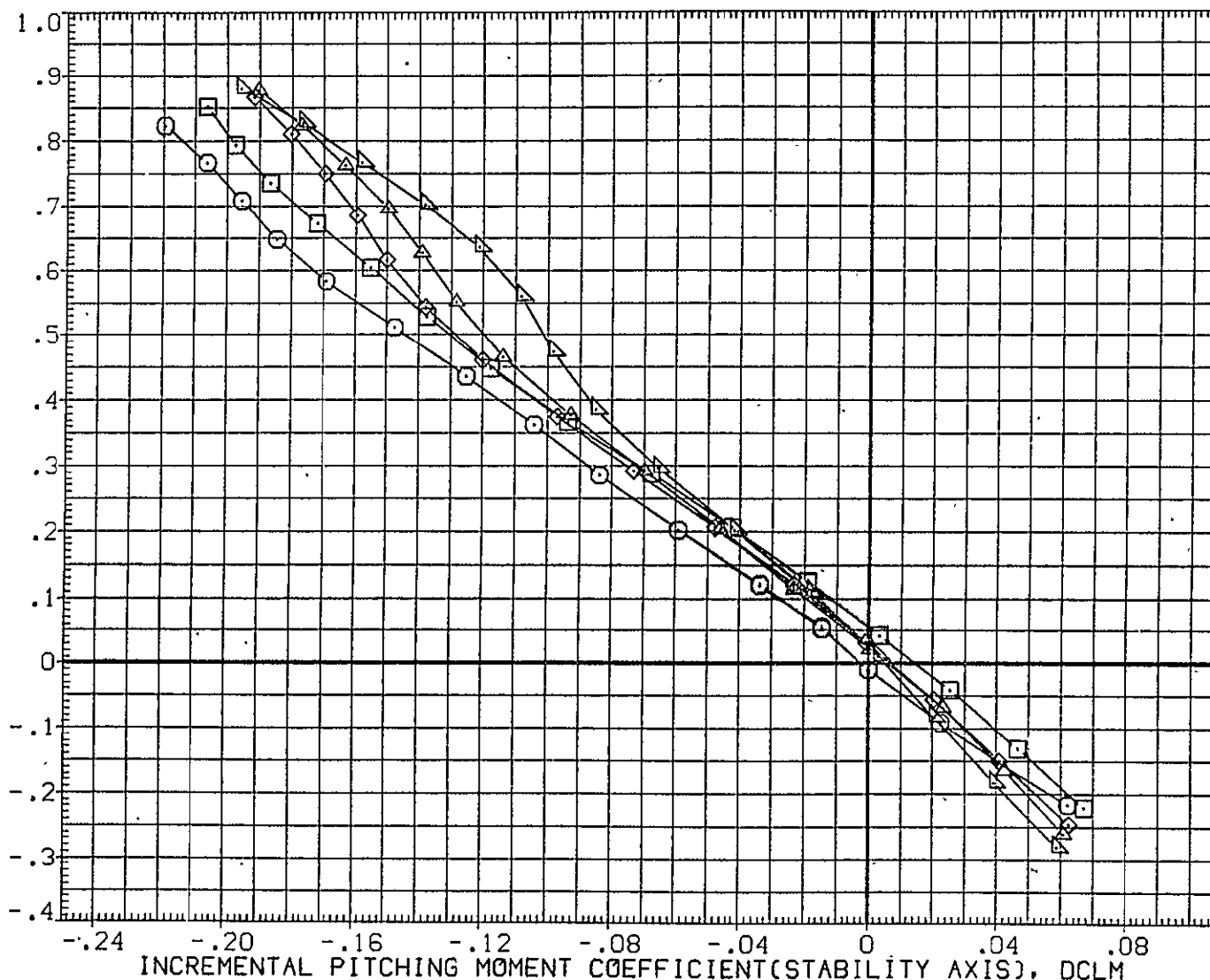


FIG. 84 747+ORB(4 DEG)+TIP FINS, FLAPS UP FERRY, BASELINE, (S=-2)

747

SYMBOL	MACH	BETA	PARAMETRIC VALUES	STAB	
○	.150		.000	-2.000	
□	.300	RUD-U	.000	.000	
◇	.500	ELV-1B	.000	ELV-0B	3.000
△	.600	S1-2	.000	S3-4	.000
▽	.700	S5-6	.000	IORB	4.000

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

CARRIER FRL ANGLE OF ATTACK, ALPHA, DEG.

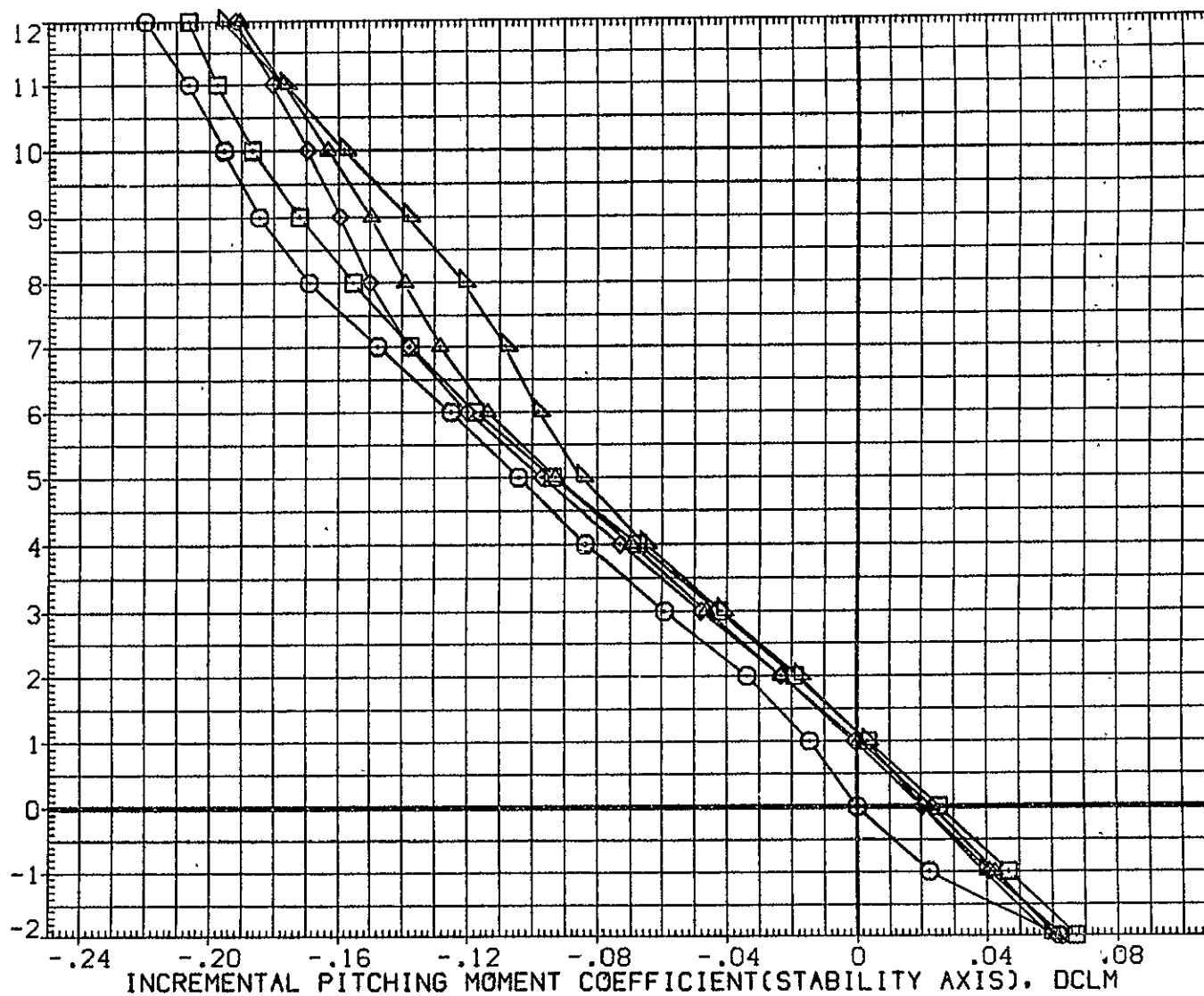


FIG. 84 747+ORB(4 DEG)+TIP FINS, FLAPS UP FERRY, BASELINE, (S=-2)

747

CA5 0RB TC5 AT38.3 (PRES. K1 FO H15.6 V9.1)(YGM117)

SYMBOL
○
□
◇
△
▽

MACH	BETA	PARAMETRIC VALUES
.149	BETA	.000 STAB -2.000
.301	RUD-U	.000 RUD-L .000
.500	ELV-1B	.000 ELV-0B 3.000
.601	S1-2	.000 S3-4 .000
.700	S5-6	.000 10RB 4.000

REFERENCE INFORMATION

SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN. X0
YMRP	.0000	IN. Y0
ZMRP	375.0000	IN. Z0
SCALE	.0300	

LIFT COEFFICIENT, CL

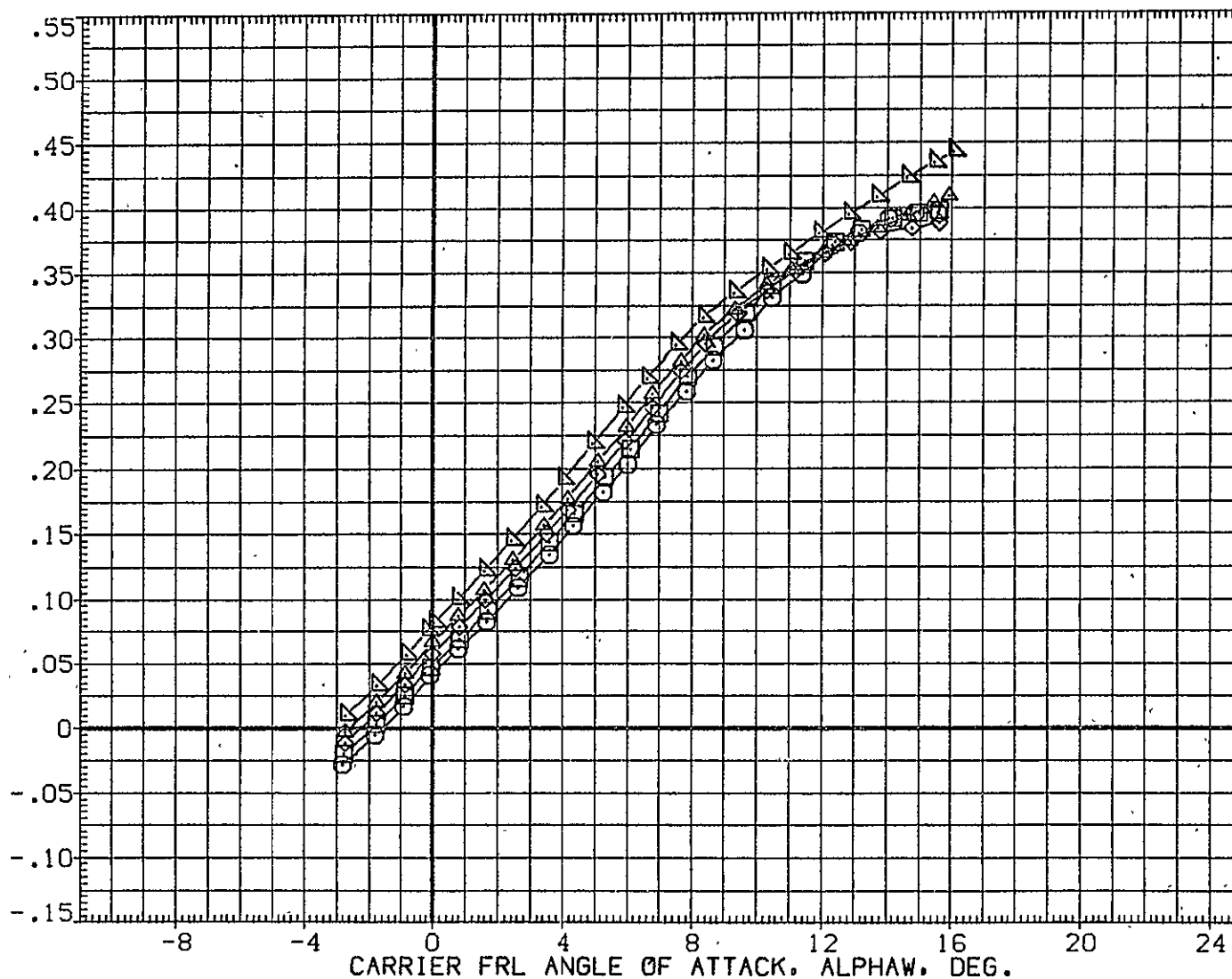


FIG. 85 747+0RB(4 DEG)+TIP FINS, FLAPS UP FERRY, BASELINE, (S=-2)

0RB

SYMBOL	MACH	PARAMETRIC VALUES				REFERENCE INFORMATION		
○	.149	BETA	.000	STAB	-2.000	SREF	2690.0000	SQ.FT.
□	.301	RUD-U	.000	RUD-L	.000	LREF	474.8100	IN.
◇	.500	ELV-1B	.000	ELV-0B	3.000	BREF	936.6800	IN.
△	.601	S1-2	.000	S3-4	.000	XMRP	1109.0000	IN. X0
▽	.700	S5-6	.000	10RB	4.000	YMRP	.0000	IN. Y0
						ZMRP	375.0000	IN. Z0
						SCALE	.0300	

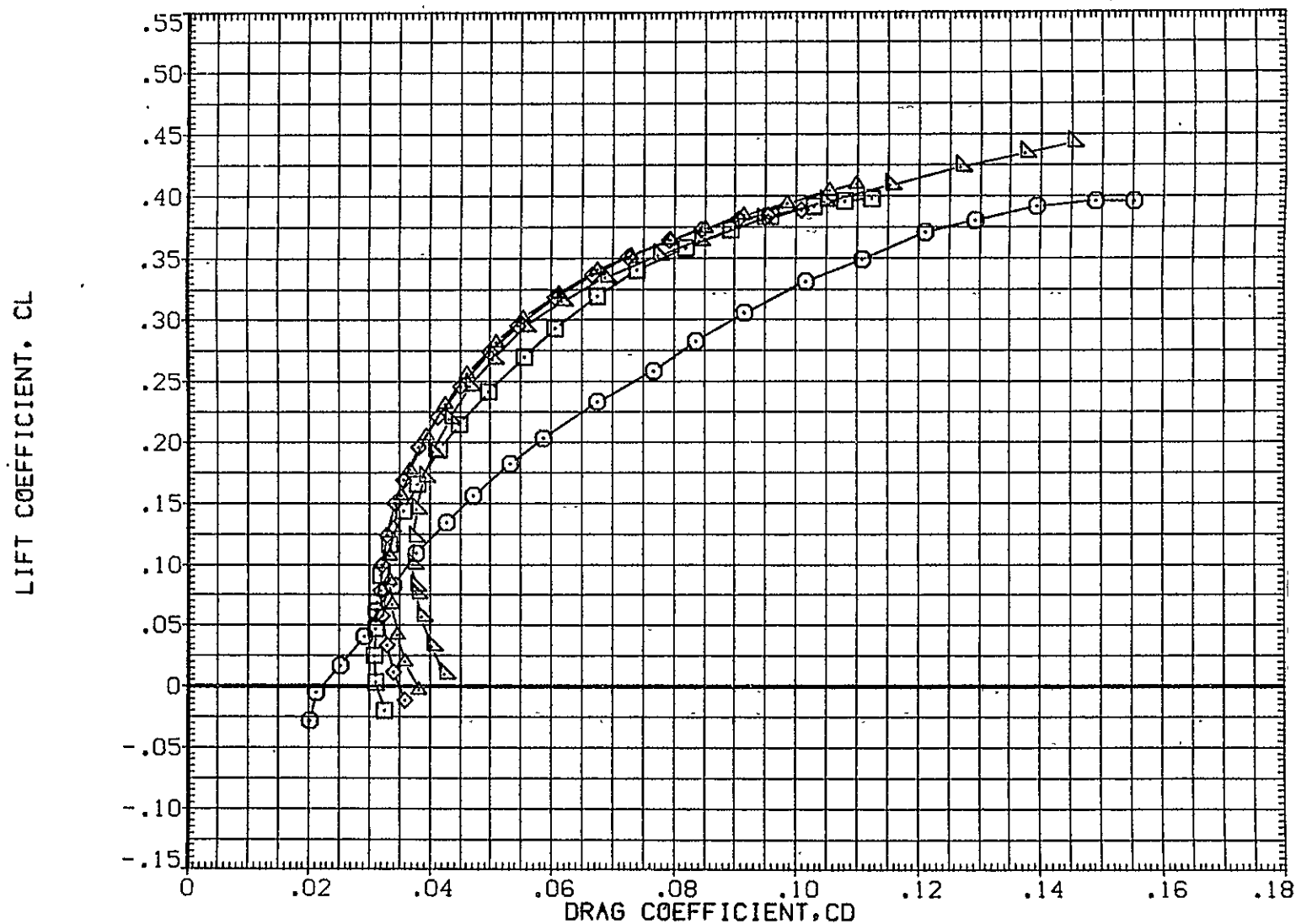


FIG. 85 747+0RB(4 DEG)+TIP FINS, FLAPS UP FERRY, BASELINE, (S=-2)

0RB

CA5 ORB TC5 AT38.3 (PRES. K1 FO H15.6 V9.1)(YGM117)

SYMBOL	MACH	PARAMETRIC VALUES				REFERENCE INFORMATION	
○	.149	BETA	.000	STAB	-2.000	SREF	2690.0000 SQ.FT.
□	.301	RUD-U	.000	RUD-L	.000	LREF	474.8100 IN.
◇	.500	ELV-1B	.000	ELV-OB	3.000	BREF	935.6800 IN.
△	.601	S1-2	.000	S3-4	.000	XMRP	1109.0000 IN. X0
▽	.700	S5-6	.000	IORB	4.000	YMRP	.0000 IN. Y0
						ZMRP	375.0000 IN. Z0
						SCALE	.0300

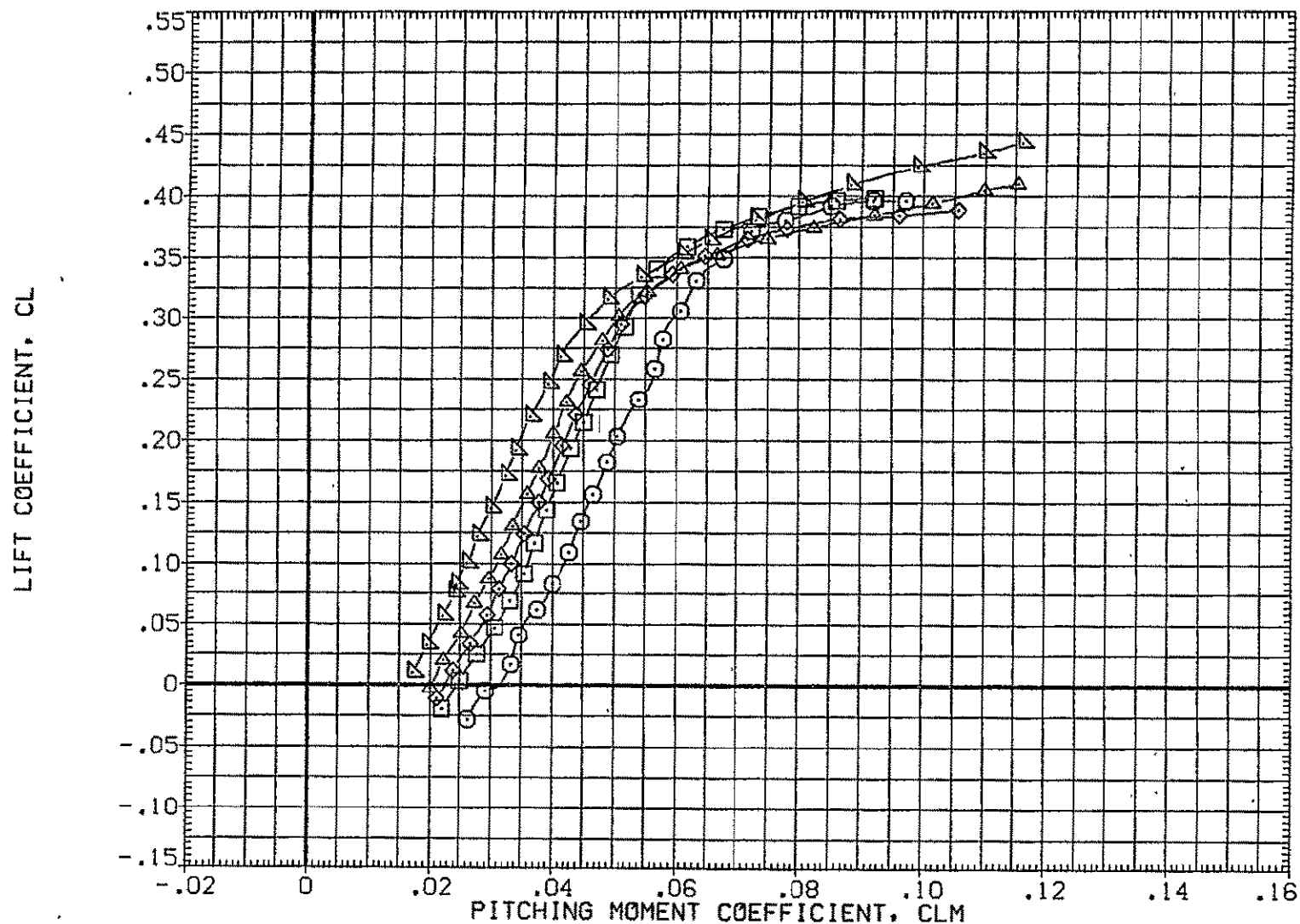


FIG. 85 747+ORB(4 DEG)+TIP FINS, FLAPS UP FERRY, BASELINE, (S=-2)

ORB

SYMBOL

MACH

PARAMETRIC VALUES

REFERENCE INFORMATION

○
□
◇
△
▽

.149	BETA	.000	STAB	-2.000
.301	RUD-U	.000	RUD-L	.000
.500	ELV-1B	.000	ELV-0B	3.000
.601	S1-2	.000	S3-4	.000
.700	SS-6	.000	10RB	4.000

SREF	2690.0000	SQ.FT:
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN. X0
YMRP	.0000	IN. Y0
ZMRP	375.0000	IN. Z0
SCALE	.0300	

CARRIER FRL ANGLE OF ATTACK, ALPHA, DEG.

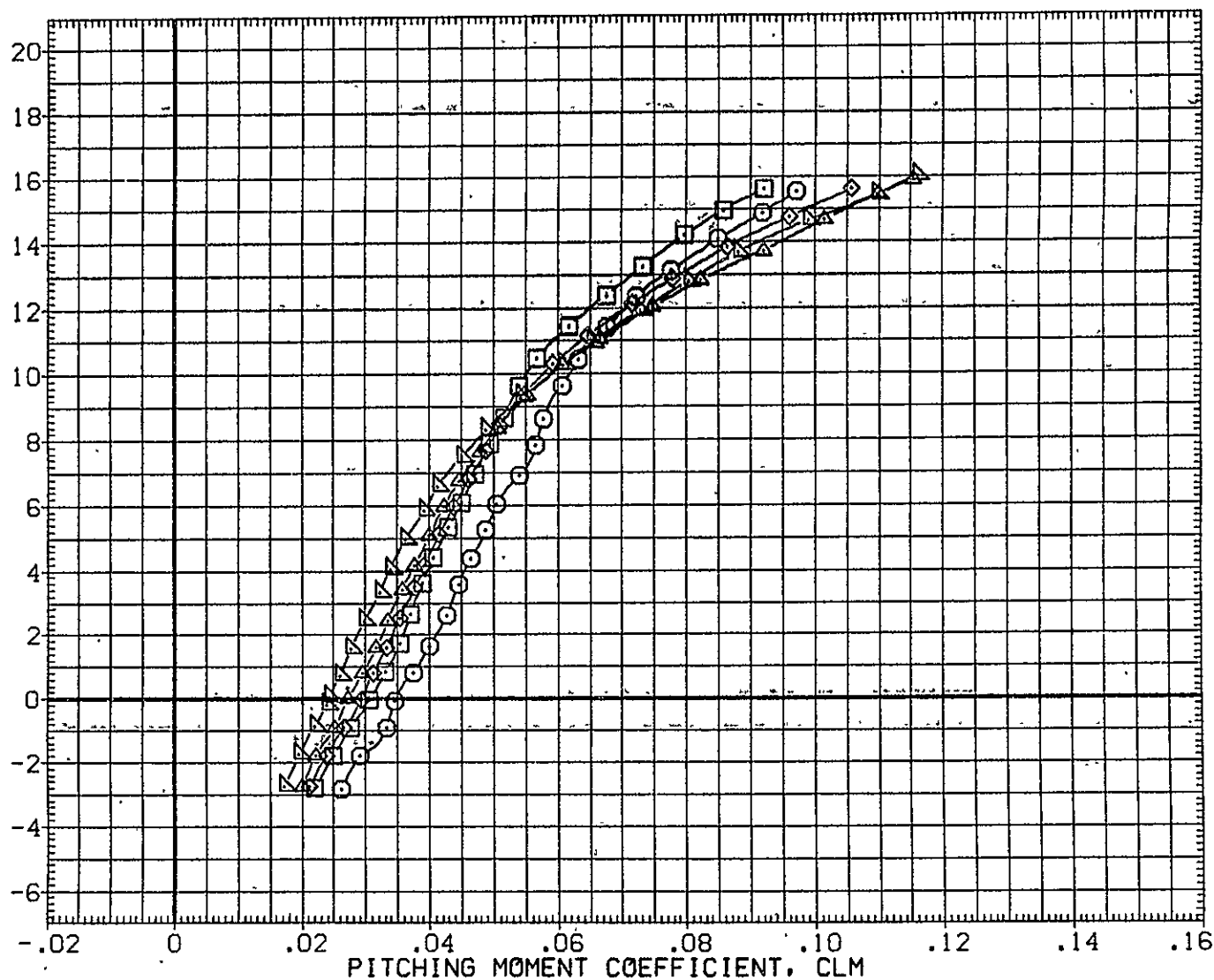


FIG. 85 747+ORB(4 DEG)+TIP FINS, FLAPS UP FERRY, BASELINE, (S=-2)

ORB

CA5 K1 FO H15.6 V9.1 (PLUS. ORB TC5 AT38.3)(RGM119)

SYMBOL
○
□
◇
△

MACH
.300
.500
.600
.700

BETA
RUD-U
ELV-1B
SI-2
S5-6

PARAMETRIC VALUES
.000
.000
-10.000
.000
.000

STAB
RUD-L
ELV-0B
S3-4
10RB
-2.000
.000
-7.000
.000
4.000

REFERENCE INFORMATION

SREF 5500.0000 SQ.FT.
LREF 327.8000 IN.
BREF 2348.0000 IN.
XMRP 1339.9100 IN. XC
YMRP .0000 IN. YC
ZMRP 190.7500 IN. ZC
SCALE .0300

LIFT COEFFICIENT, CL

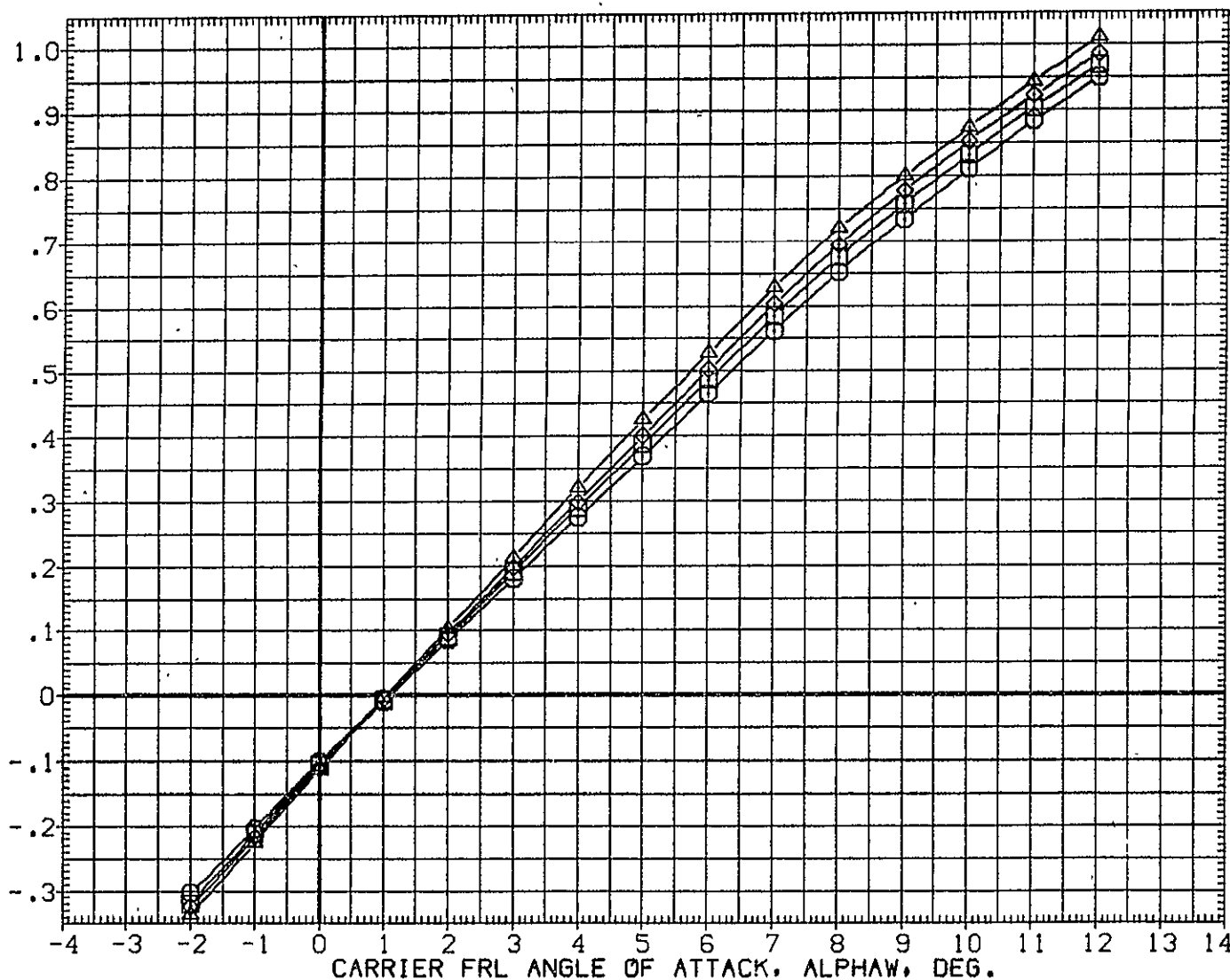


FIG. 86 747+0RB(4 DEG)+TIP FINS, FLAPS UP FERRY, ELEV=-10 DEG

TOTAL

SYMBOL	MACH	PARAMETRIC VALUES			
○	.300	BETA	.000	STAB	-2.000
□	.500	RUD-U	.000	RUD-L	.000
◇	.600	ELV-18	-10.000	ELV-08	-7.000
△	.700	S1-2	.000	S3-4	.000
		S5-6	.000	10RB	4.000

REFERENCE INFORMATION		
SREF	5500.0000	50.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

LIFT COEFFICIENT, CL

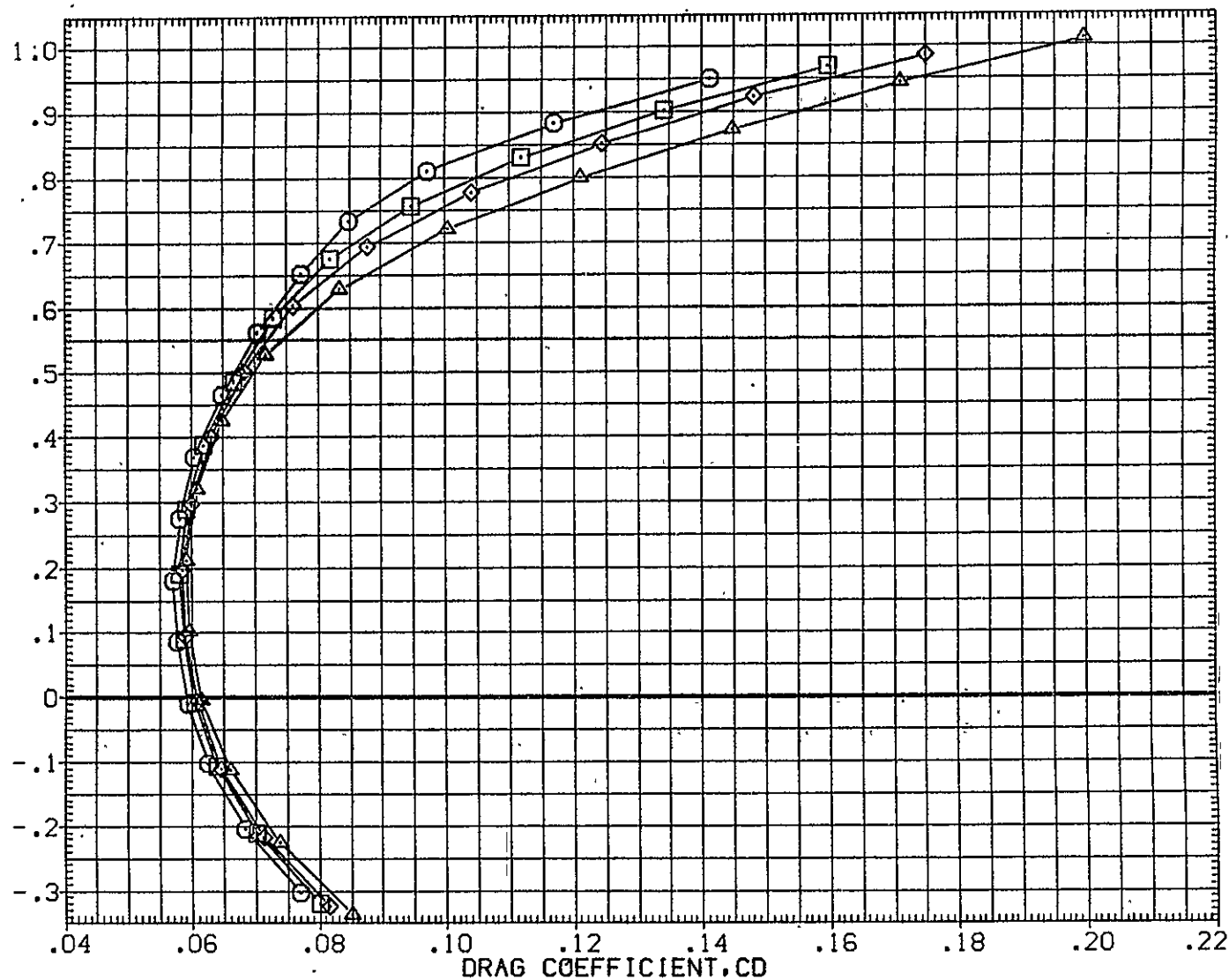


FIG. 86 747+ORB(4 DEG)+TIP FINS, FLAPS UP FERRY, ELEV=-10 DEG

TOTAL

CA5 K1 F0 H15.6 V9.1 (PLUS. ORB TC5 AT38.3)(RGM119)

SYMBOL	MACH	PARAMETRIC VALUES			
○	.300	BETA	.000	STAB	-2.000
□	.500	RUD-U	.000	RUD-L	.000
◇	.600	ELV-IB	-10.000	ELV-OB	-7.000
△	.700	S1-2	.000	S3-4	.000
		S5-6	.000	IORB	4.000

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

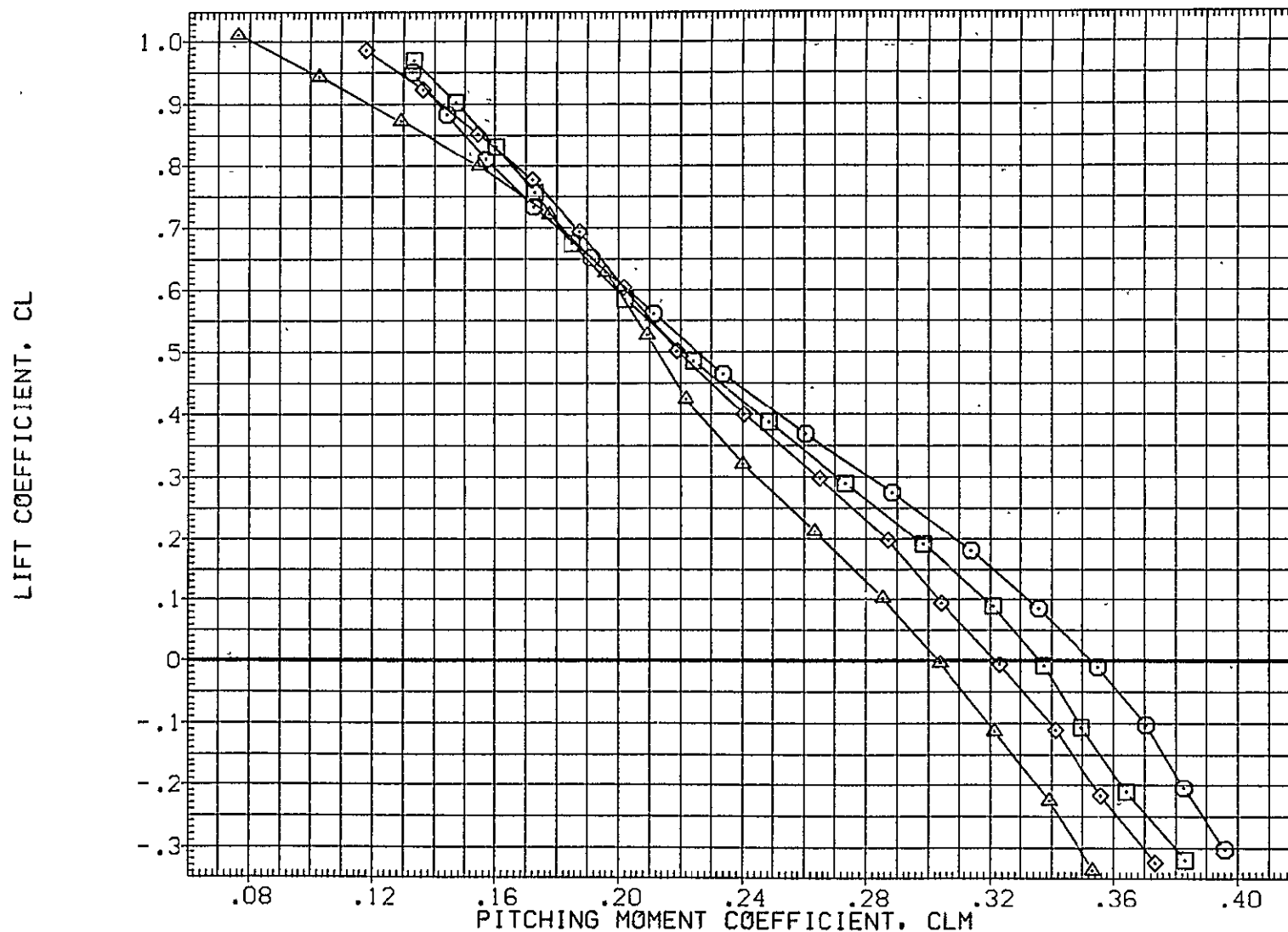


FIG. 86 747+ORB(4 DEG)+TIP FINS, FLAPS UP FERRY, ELEV=-10 DEG

TOTAL

SYMBOL
 ○
 ◇
 □
 △

MACH	PARAMETRIC VALUES			
.300	BETA	.000	STAB	-2.000
.500	RUD-U	.000	RUD-L	.000
.600	ELV-1B	-10.000	ELV-OB	-7.000
.700	S1-2	.000	S3-4	.000
	S5-6	.000	IORB	4.000

REFERENCE INFORMATION

SREF	5500.0000	50.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

CARRIER FRL ANGLE OF ATTACK, ALPHAW, DEG.

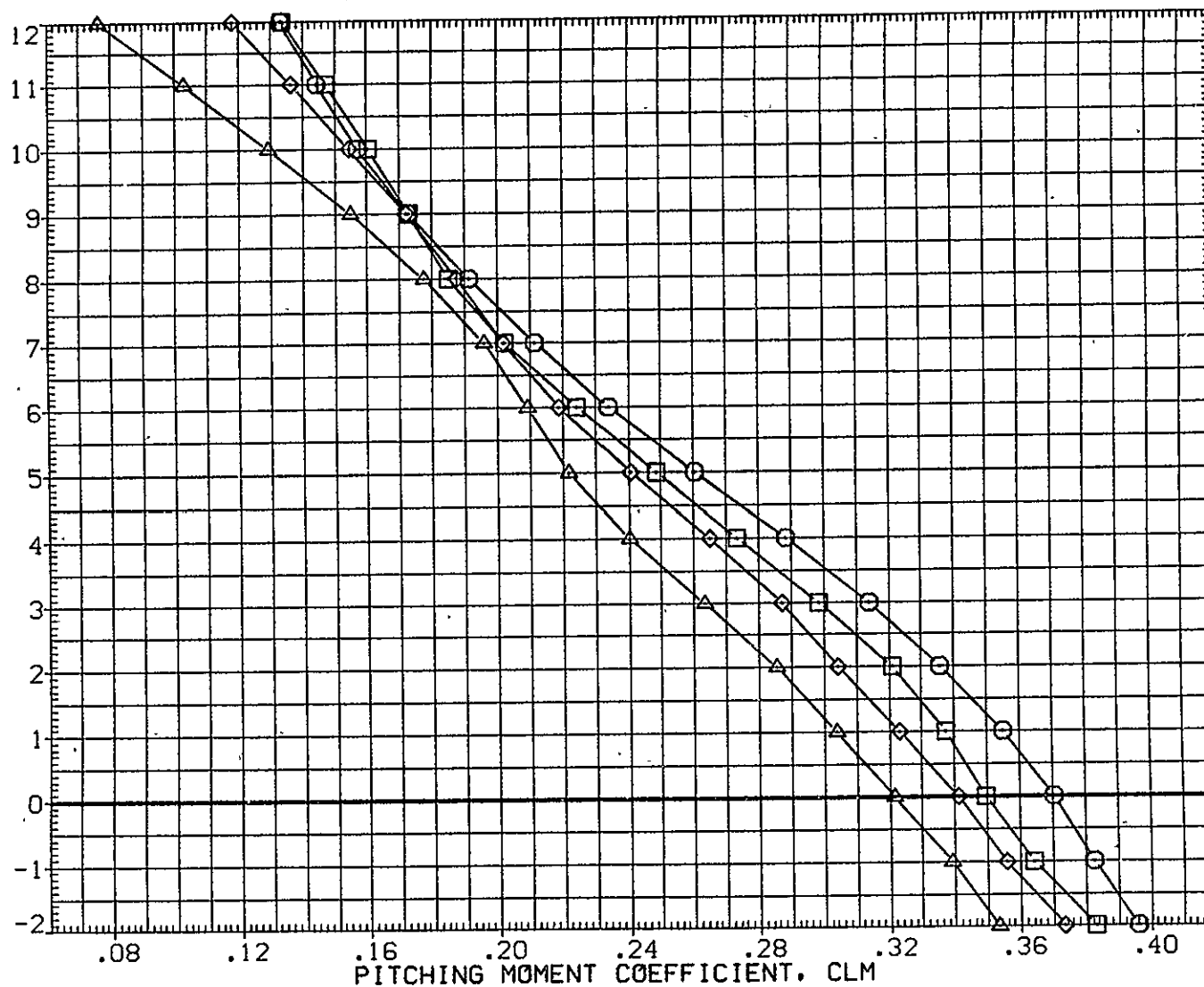


FIG. 86 747+ORB(4 DEG)+TIP FINS, FLAPS UP FERRY, ELEV=-10 DEG

TOTAL

PAGE 344

CA5 K1 FO H15.6 V9.1 MINUS ORB TC5 AT38.3 (BGM119)

SYMBOL	MACH	PARAMETRIC VALUES				REFERENCE INFORMATION		
○	.300	BETA	.000	STAB	-2.000	SREF	5500.0000	SQ.FT.
□	.500	RUD-U	.000	RUD-L	.000	LREF	327.8000	IN.
◇	.600	ELV-IB	-10.000	ELV-OB	-7.000	BREF	2348.0000	IN.
△	.700	S1-2	.000	S3-4	.000	XMRP	1339.9100	IN. XC
		S5-6	.000	ICRB	4.000	YMRP	.0000	IN. YC
						ZMRP	190.7500	IN. ZC
						SCALE	.0300	

INCREMENTAL LIFT FORCE COEFFICIENT(STABILITY AXIS), DCL

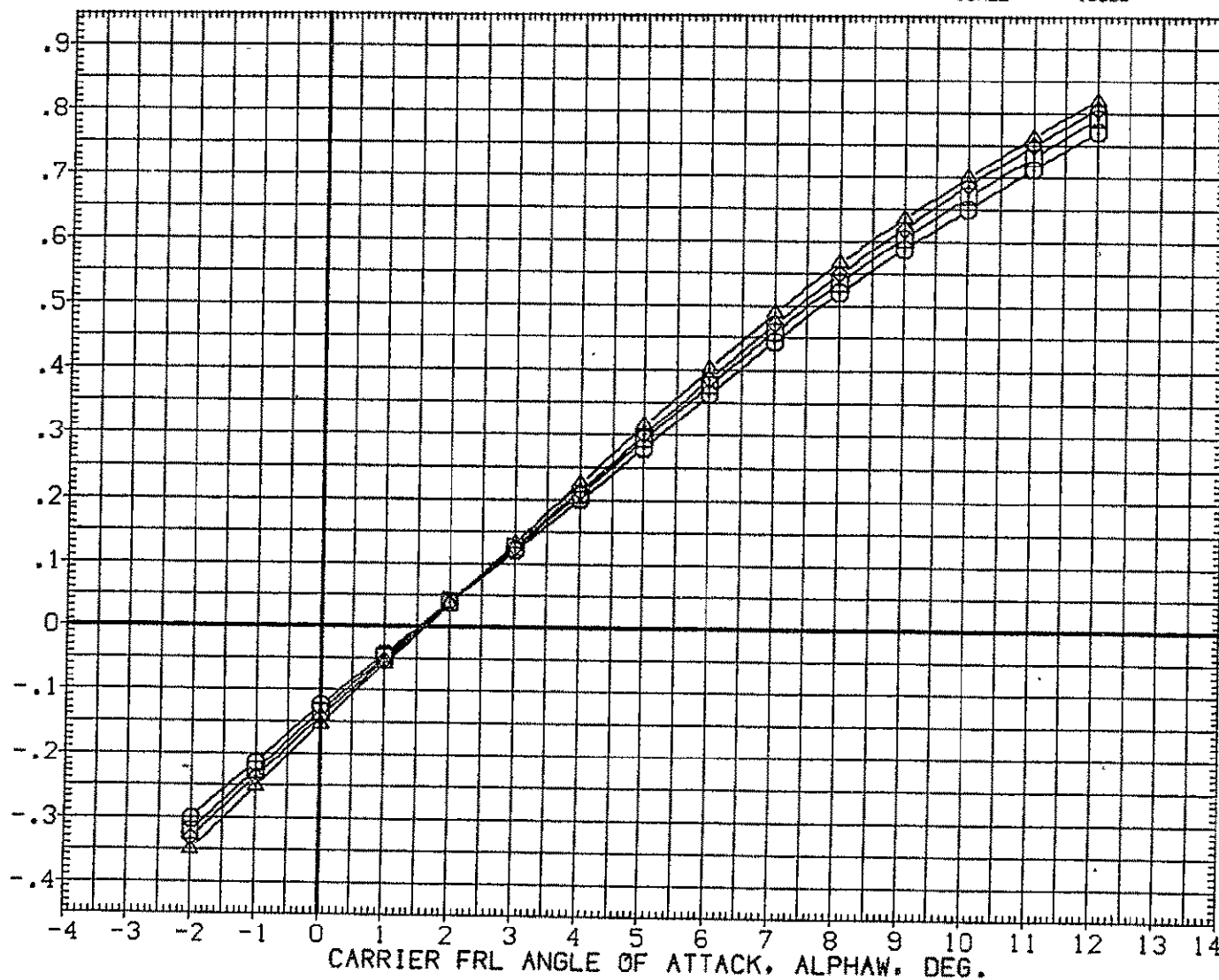


FIG. 87 747+ORB(4 DEG)+TIP FINS, FLAPS UP FERRY, ELEV=-10 DEG

747

SYMBOL	MACH	PARAMETRIC VALUES				REFERENCE INFORMATION		
○	.300	BETA	.000	STAB	-2.000	SREF	5500.0000	SQ.FT.
□	.500	RUD-U	.000	RUD-L	.000	LREF	327.8000	IN.
◇	.600	ELV-18	-10.000	ELV-09	-7.000	BREF	2348.0000	IN.
△	.700	S1-2	.000	S3-4	.000	XMRP	1339.9100	IN. XC
		S5-6	.000	IORB	4.000	YMRP	.0000	IN. YC
						ZMRP	190.7500	IN. ZC
						SCALE	.0300	

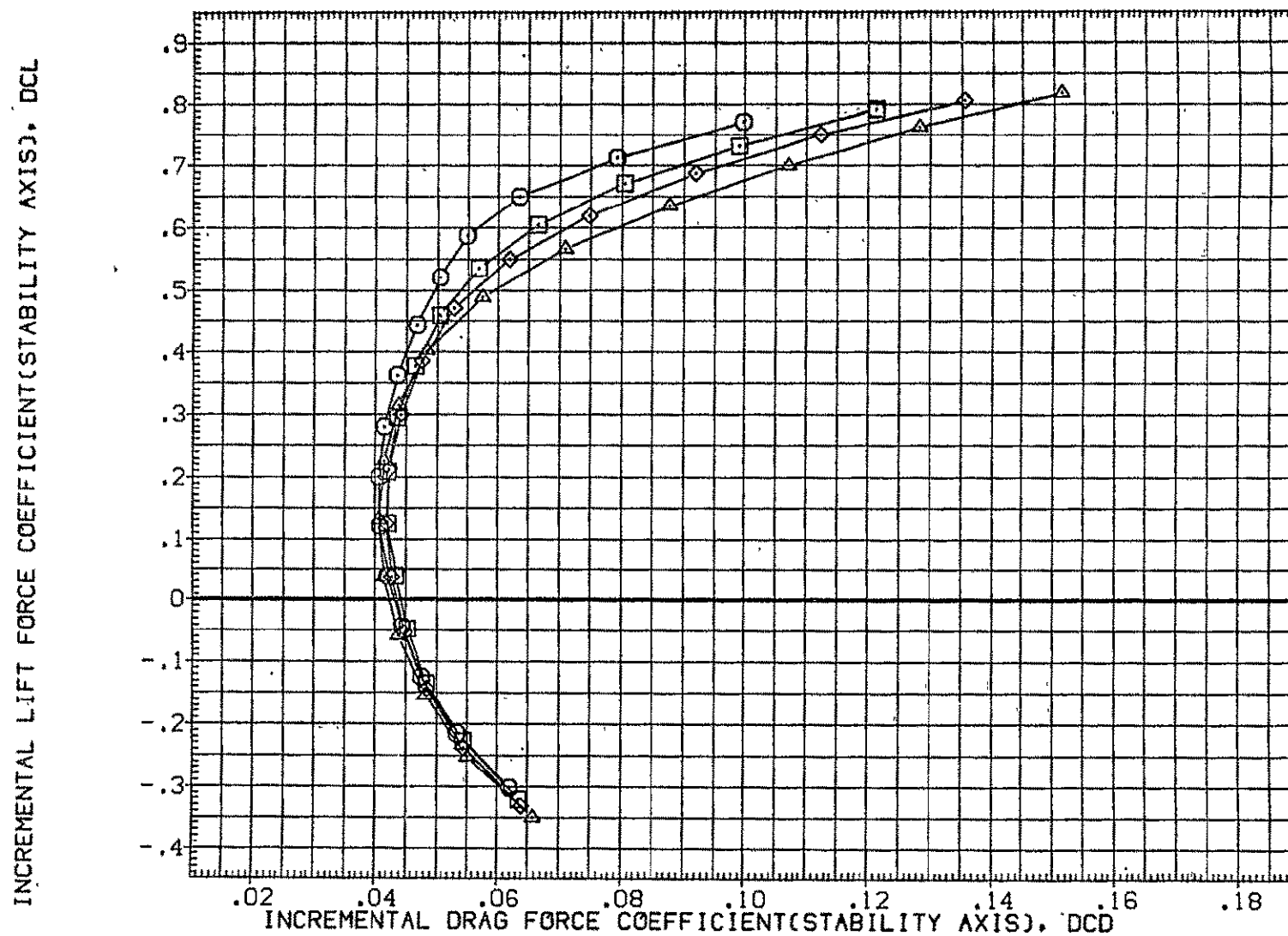


FIG. 87 747+ORB(4 DEG)+TIP FINS, FLAPS UP FERRY, ELEV=-10 DEG

747

CA5 K1 F0 H15.6 V9.1 MINUS 0RB TC5 AT38.3 (BGM119)

SYMBOL	MACH	PARAMETRIC VALUES			
○	.300	BETA	.000	STAB	-2.000
□	.500	RUD-U	.000	RUD-L	.000
◇	.600	ELV-1B	-10.000	ELV-0B	-7.000
△	.700	S1-2	.000	S3-4	.000
		S5-6	.000	10RB	4.000

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

INCREMENTAL LIFT FORCE COEFFICIENT(STABILITY AXIS), DCL

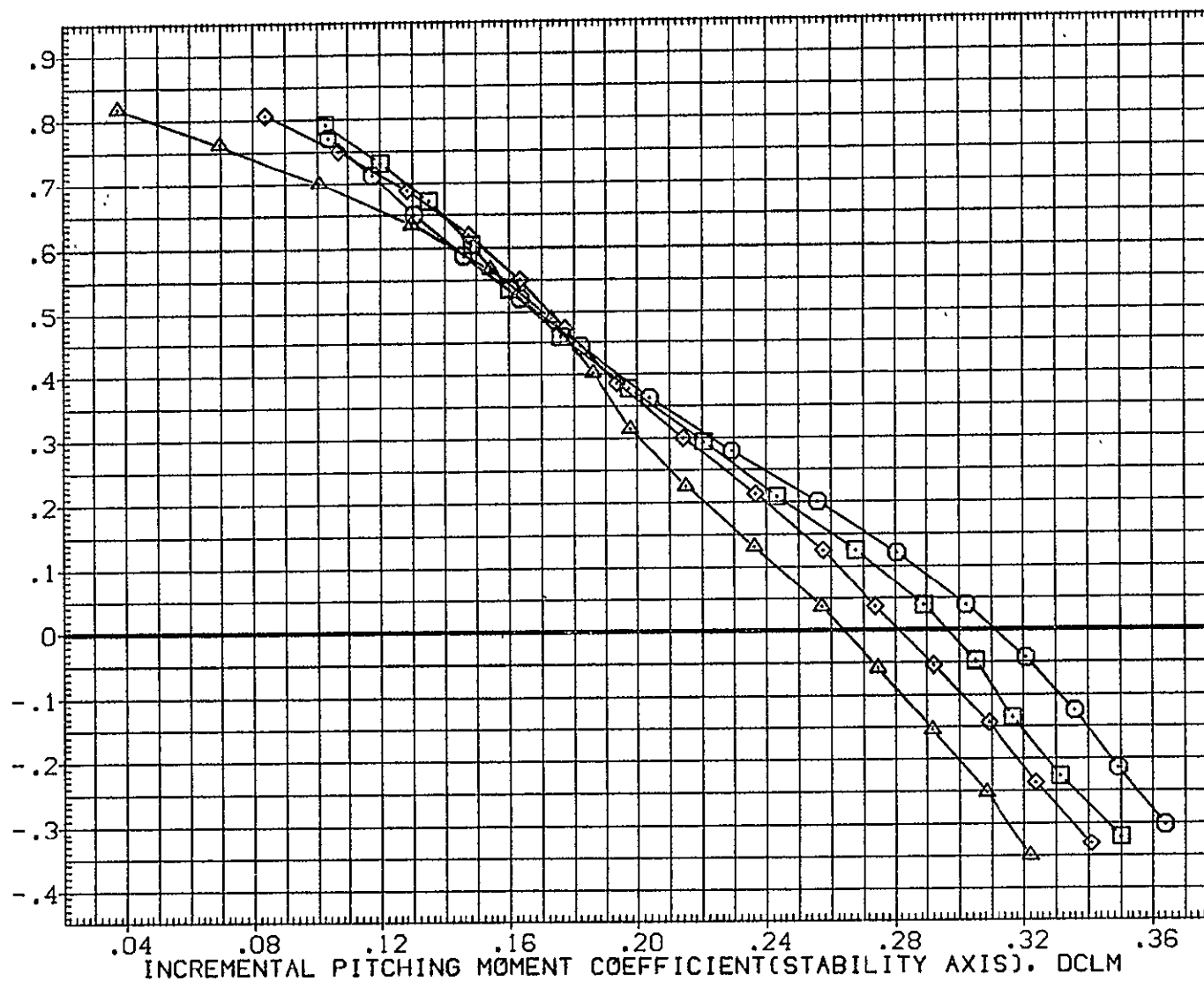


FIG. 87 747+0RB(4 DEG)+TIP FINS, FLAPS UP FERRY, ELEV=-10 DEG

747

SYMBOL	MACH	PARAMETRIC VALUES				REFERENCE INFORMATION		
○	.300	BETA	.000	STAB	-2.000	SREF	5500.0000	SQ.FT.
□	.500	RUD-U	.000	RUD-L	.000	LREF	327.8000	IN.
◇	.600	ELV-1B	-10.000	ELV-0B	-7.000	BREF	2348.0000	IN.
△	.700	S1-2	.000	S3-4	.000	XMRP	1339.9100	IN. XC
		S5-6	.000	IORB	4.000	YMRP	.0000	IN. YC
						ZMRP	190.7500	IN. ZC
						SCALE	.0300	

CARRIER FRL ANGLE OF ATTACK, ALPHAW, DEG.

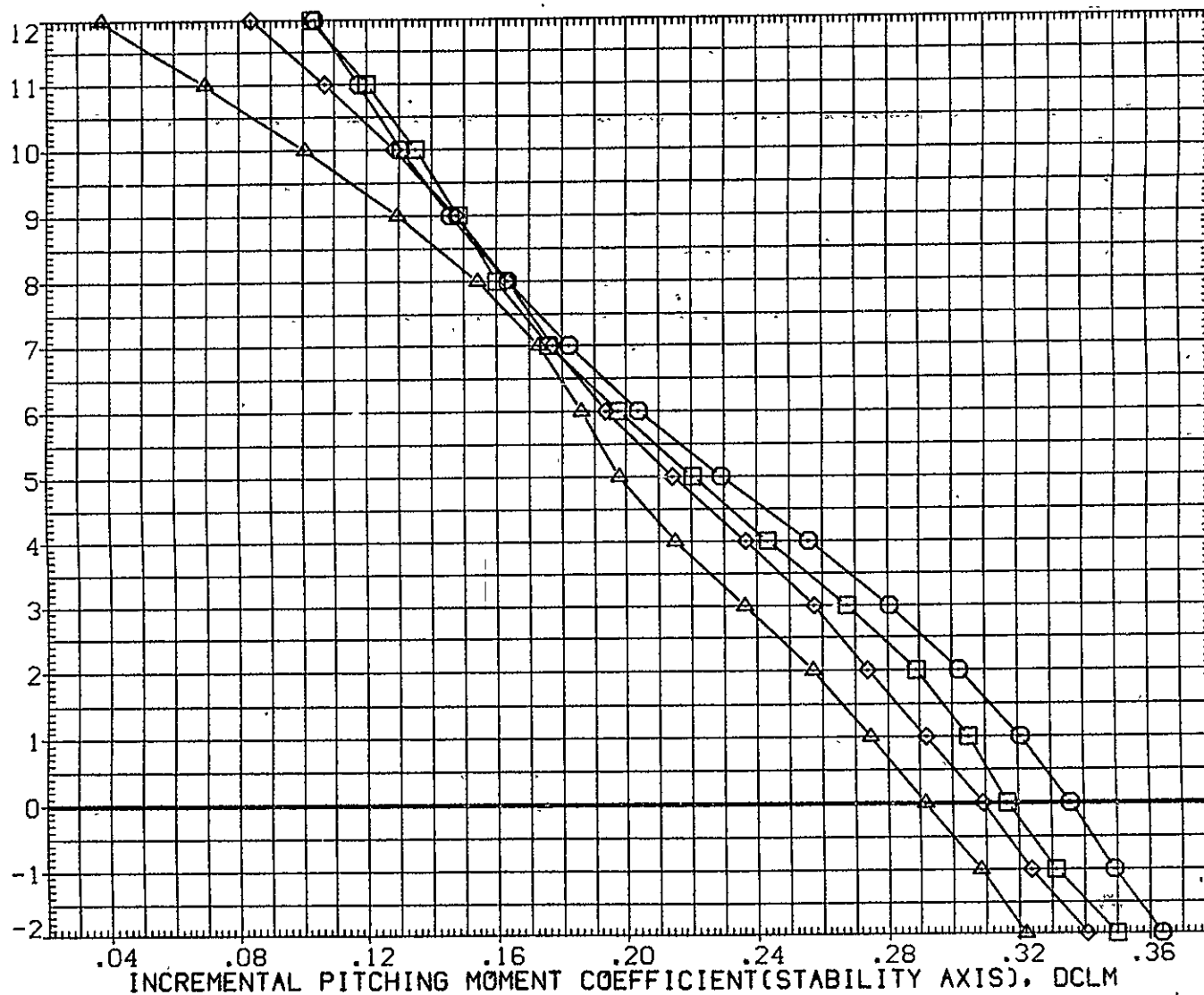


FIG. 87 747+ORB(4 DEG)+TIP FINS, FLAPS UP FERRY, ELEV=-10 DEG

747

CA5 ORB TC5 AT38.3 (PRES. K1 FO H15.6 V9.1)(YGM119)

SYMBOL	MACH	PARAMETRIC VALUES			
○	.301	BETA	.000	STAB	-2.000
□	.499	RUD-U	.000	RUD-L	.000
◇	.600	ELV-1B	-10.000	ELV-0B	-7.000
△	.700	S1-2	.000	S3-4	.000
		S5-6	.000	10RB	4.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN. X0
YMRP	.0000	IN. Y0
ZMRP	375.0000	IN. Z0
SCALE	.0300	

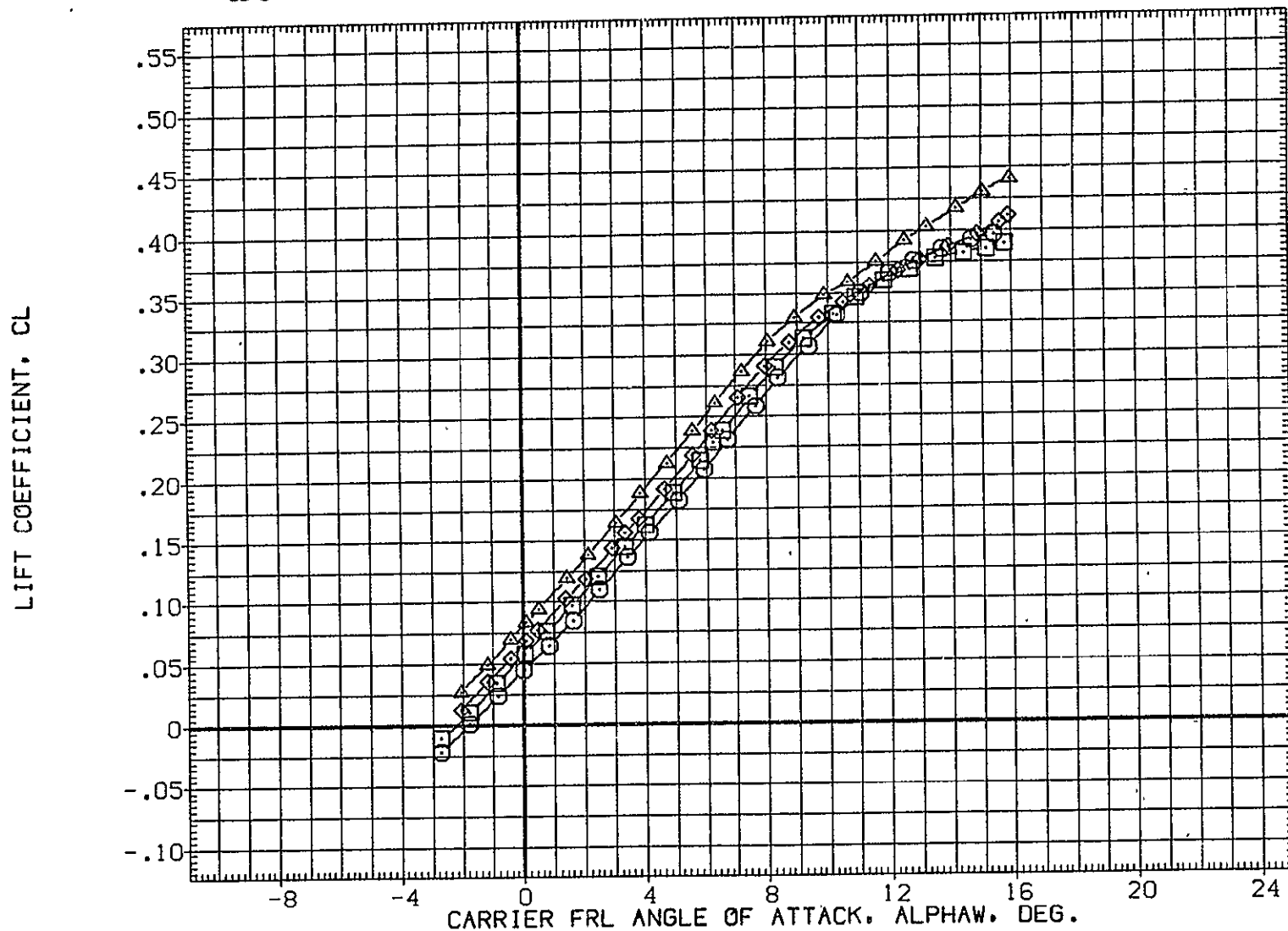


FIG. 88 747+ORB(4 DEG)+TIP FINS, FLAPS UP FERRY, ELEV=-10 DEG

ORB

SYMBOL	MACH	PARAMETRIC VALUES			
○	.301	BETA	.000	STAB	-2.000
□	.499	RUD-U	.000	RUD-L	.000
◇	.600	ELV-1B	-10.000	ELV-0B	-7.000
△	.700	S1-2	.000	S3-4	.000
		S5-6	.000	10RB	4.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN. X0
YMRP	.0000	IN. Y0
ZMRP	375.0000	IN. Z0
SCALE	.0300	

LIFT COEFFICIENT, CL

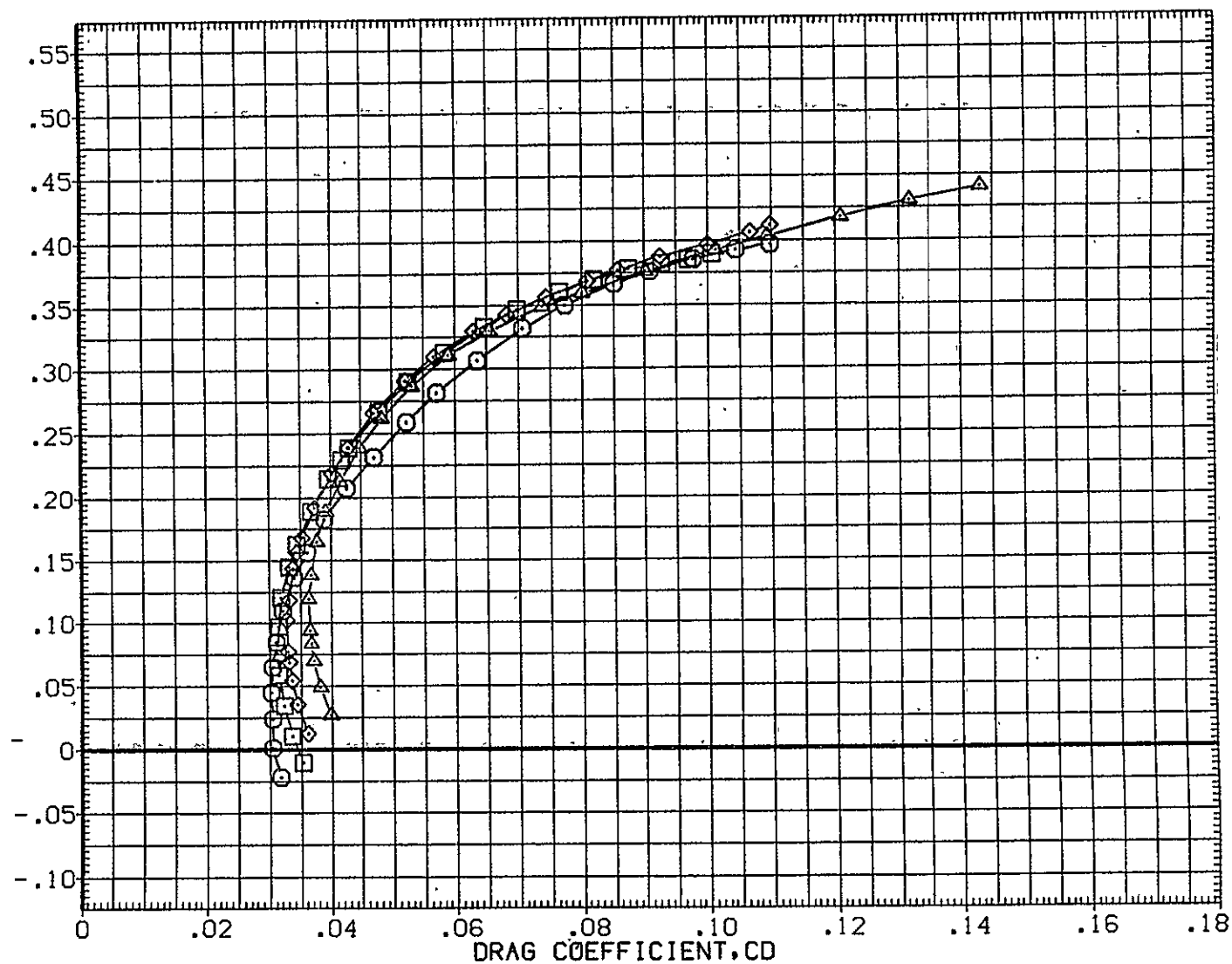


FIG. 88 747+0RB(4 DEG)+TIP FINS, FLAPS UP FERRY, ELEV=-10 DEG

0RB

CA5 ORB TC5 AT38.3 (PRES. K1 FO H15.6 V9.1)(YGM119)

SYMBOL	MACH	PARAMETRIC VALUES			
○	.301	BETA	.000	STAB	-2.000
□	.499	RUD-U	.000	RUD-L	.000
◇	.600	ELV-1B	-10.000	ELV-0B	-7.000
△	.700	S1-2	.000	S3-4	.000
		S5-6	.000	10RB	4.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN. X0
YMRP	.0000	IN. Y0
ZMRP	375.0000	IN. Z0
SCALE	.0300	

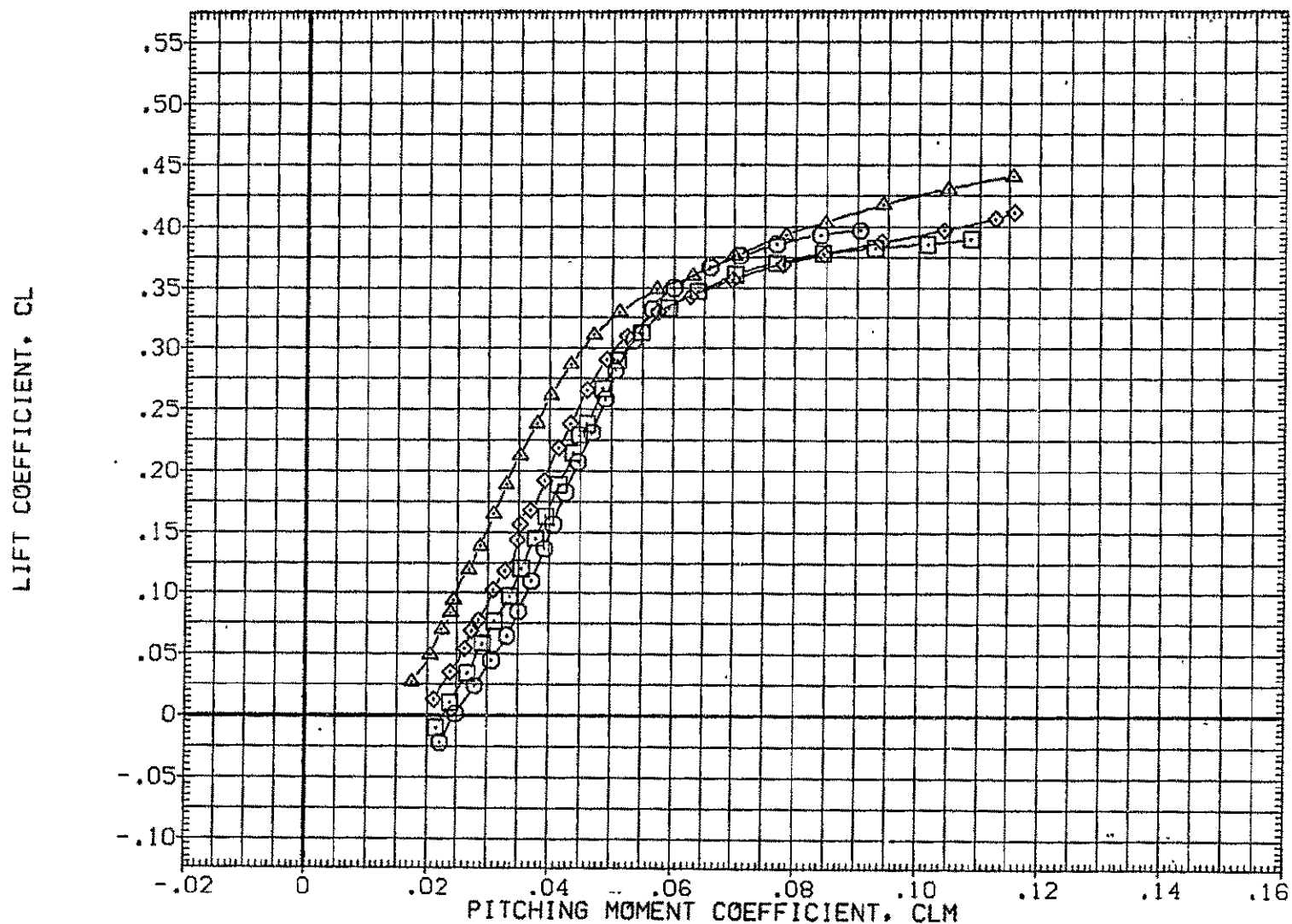


FIG. 88 747+0RB(4 DEG)+TIP FINS, FLAPS UP FERRY, ELEV=-10 DEG

ORB

SYMBOL
 ○
 □
 ◇
 △

MACH	BETA	PARAMETRIC VALUES	STAB	
.301		.000	STAB	-2.000
.499	RUD-U	.000	RUD-L	.000
.600	ELV-1B	-10.000	ELV-OB	-7.000
.700	S1-2	.000	S3-4	.000
	S5-6	.000	IORB	4.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN. X0
YMRP	.0000	IN. Y0
ZMRP	375.0000	IN. Z0
SCALE	.0300	

CARRIER FRL ANGLE OF ATTACK, ALPHAW, DEG.

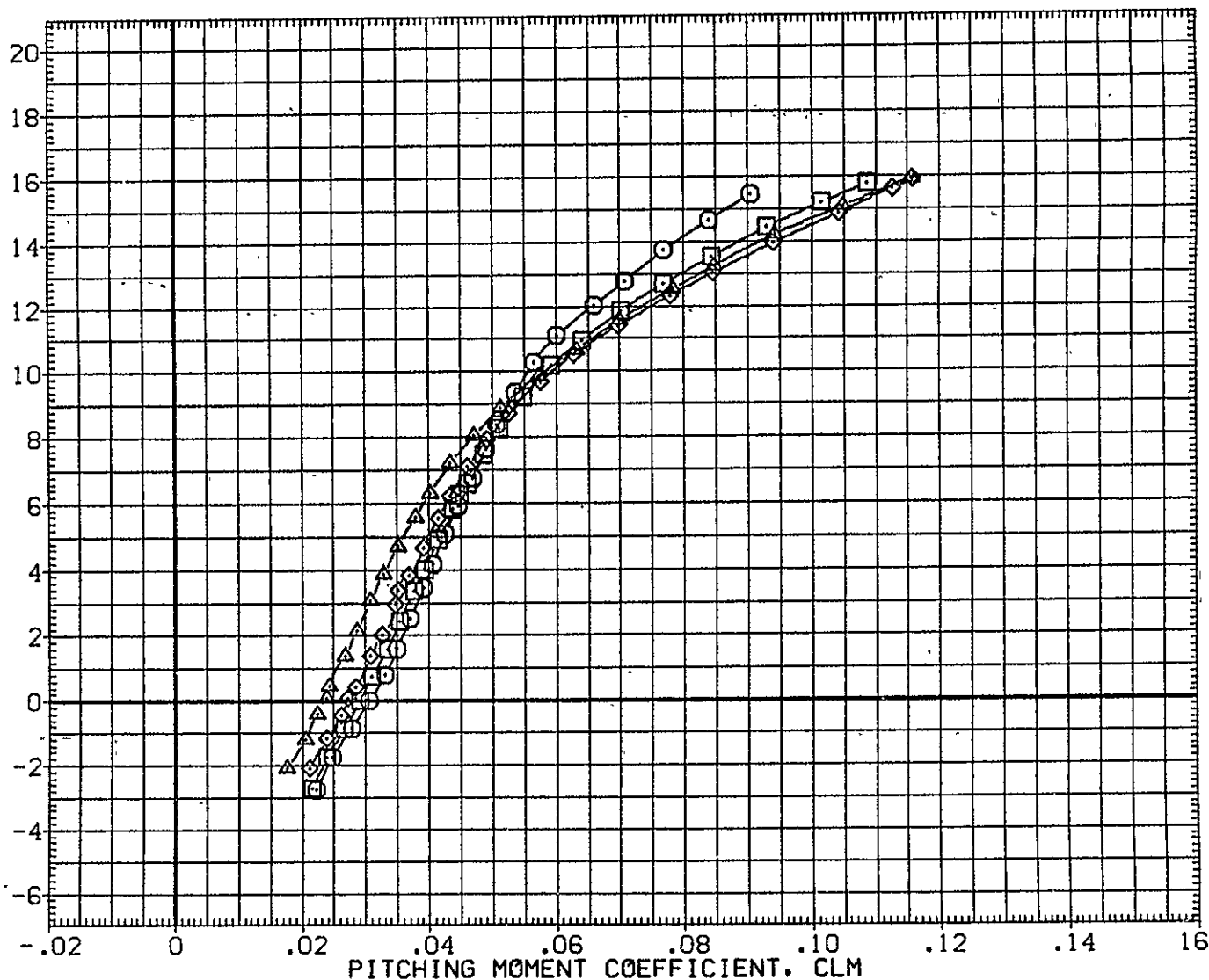


FIG. 88 747+ORB(4 DEG)+TIP FINS, FLAPS UP FERRY, ELEV=-10 DEG

ORB

CA5 K1 FO H15.6 V9.1 (PLUS. ORB TC5 AT38.3)(RGM120)

SYMBOL
○
□
◇
△

MACH

.300

.499

.600

.700

BETA

RUD-U

ELV-1B

S1-2

S5-6

PARAMETRIC VALUES

.000

.000

10.000

.000

.000

STAB

RUD-L

ELV-OB

S3-4

ICRB

-2.000

.000

13.000

.000

4.000

REFERENCE INFORMATION

SREF	5500.0000	SQ.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

LIFT COEFFICIENT, CL

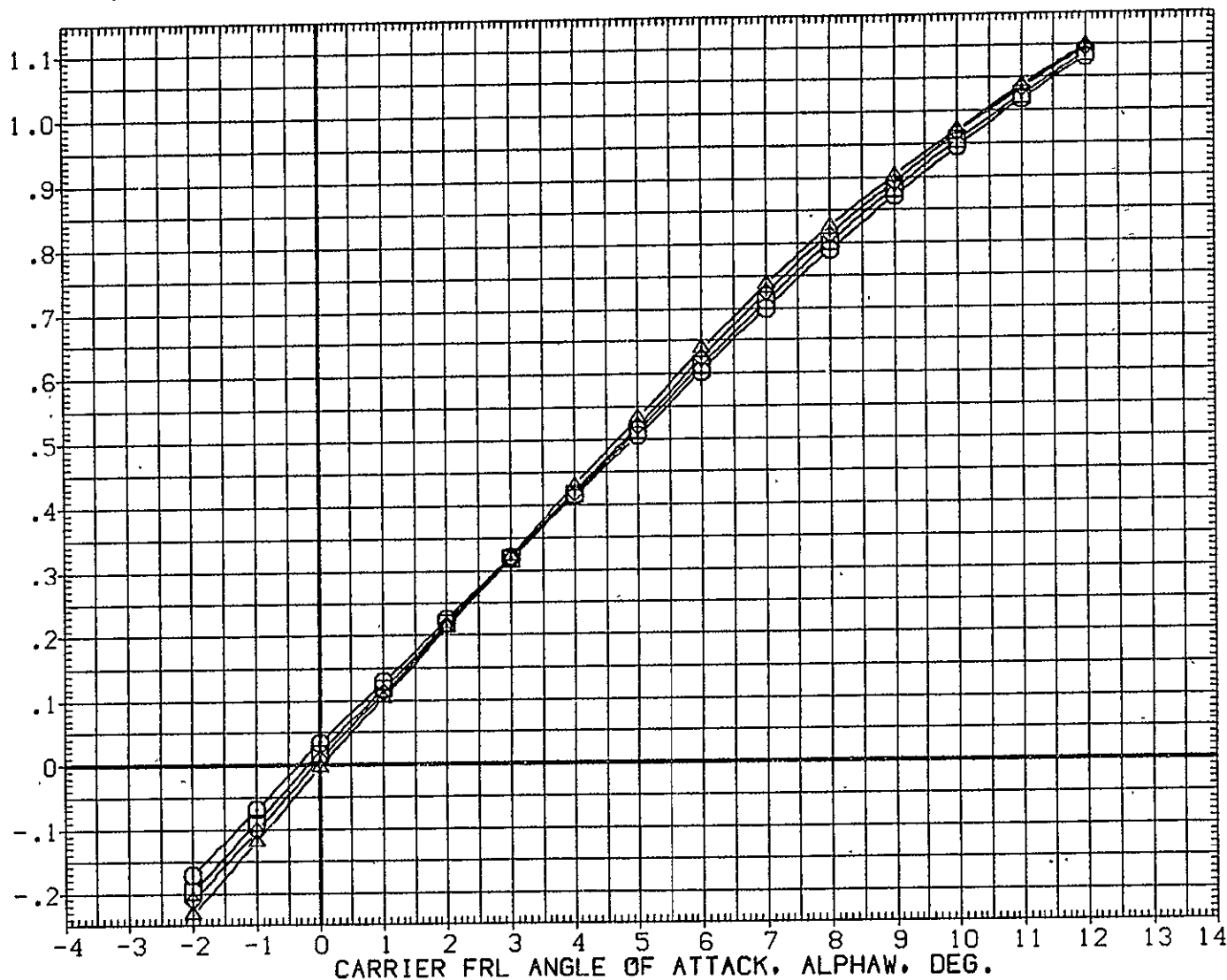


FIG. 89 747+ORB(4 DEG)+TIP FINS, FLAPS UP FERRY, ELEV=+10 DEG

SYMBOL	MACH	PARAMETRIC VALUES			
○	.300	BETA	.000	STAB	-2.000
□	.499	RUD-U	.000	RUD-L	.000
◇	.600	ELV-1B	10.000	ELV-0B	13.000
△	.700	S1-2	.000	S3-4	.000
		S5-6	.000	ICRB	4.000

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

LIFT COEFFICIENT, CL

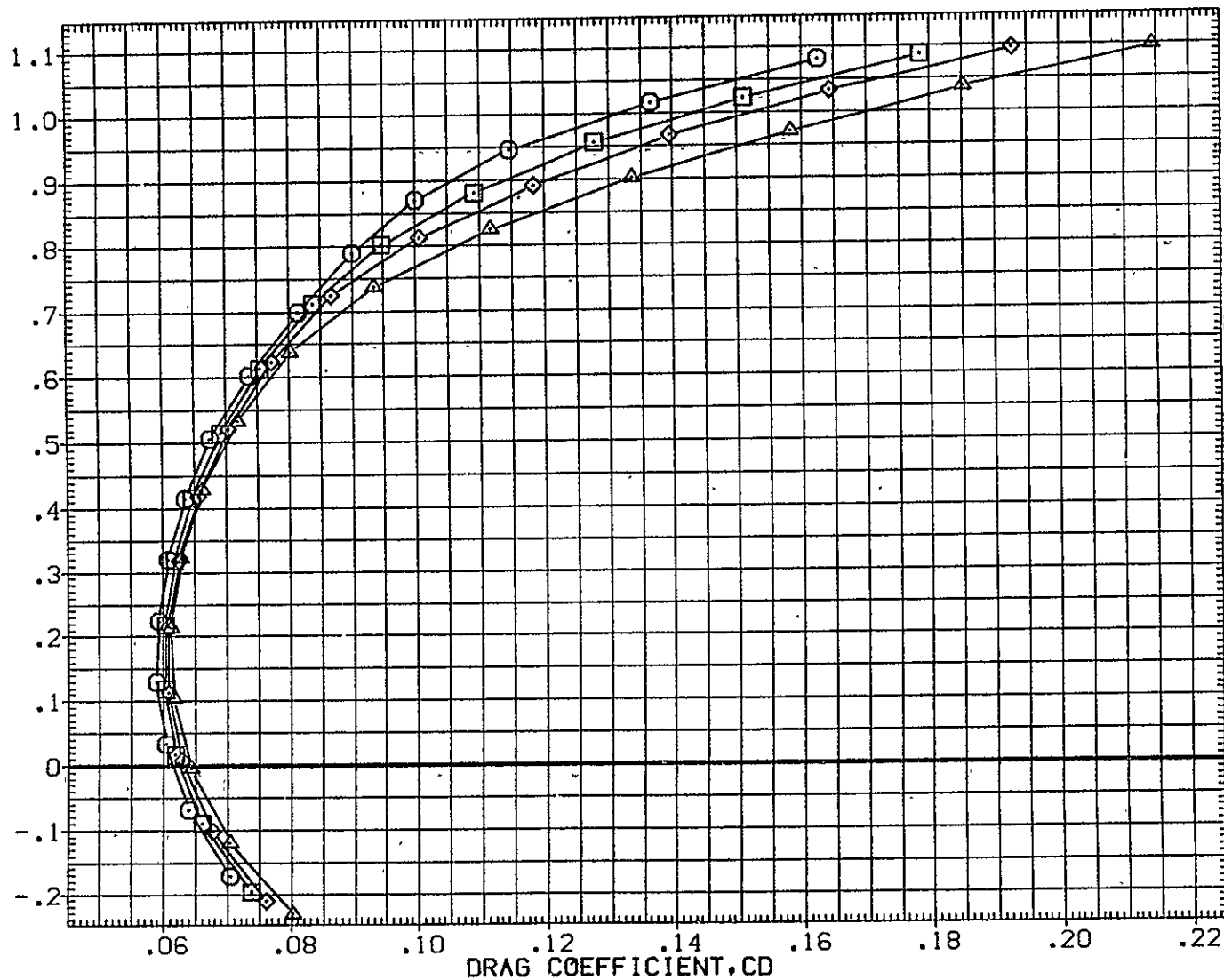


FIG. 89 747+0RB(4 DEG)+TIP FINS, FLAPS UP FERRY, ELEV=+10 DEG

CA5 K1 F0 H15.6 V9.1 (PLUS. 0RB TC5 AT38.3)(RGM120)

SYMBOL	MACH	PARAMETRIC VALUES			
○	.300	BETA	.000	STAB	-2.000
□	.499	RUD-U	.000	RUD-L	.000
◇	.600	ELV-1B	10.000	ELV-0B	13.000
△	.700	S1-2	.000	S3-4	.000
		S5-6	.000	10RB	4.000

REFERENCE INFORMATION		
SREF	5500.0000	SG.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

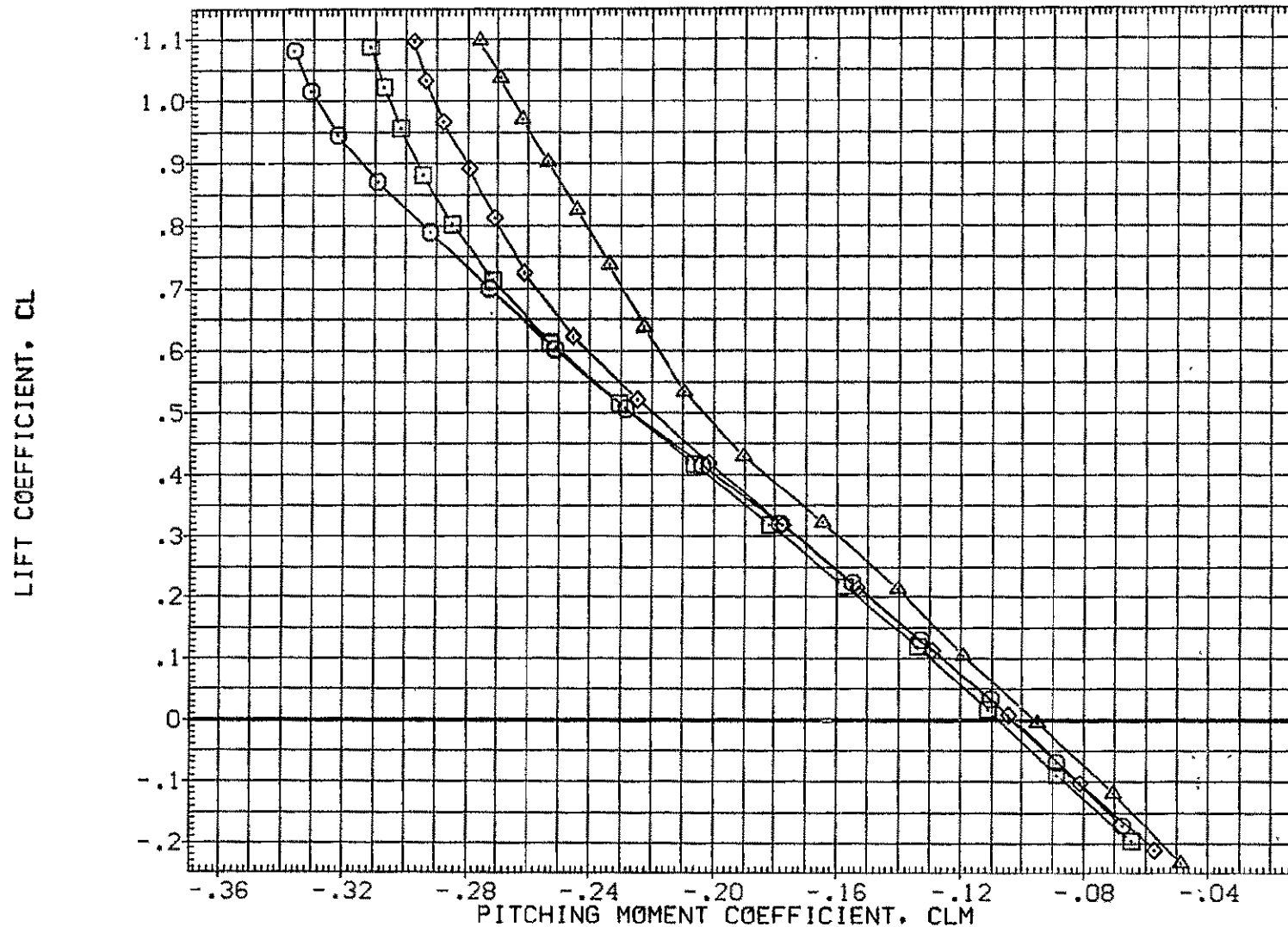


FIG. 89 747+0RB(4 DEG)+TIP FINS, FLAPS UP FERRY, ELEV=+10 DEG

SYMBOL	MACH	PARAMETRIC VALUES				REFERENCE INFORMATION		
		BETA	.000	STAB	-2.000	SREF	5500.0000	SQ.FT.
○	.300	RUD-U	.000	RUD-L	.000	LREF	327.8000	IN.
□	.499	ELV-IB	10.000	ELV-OB	13.000	BREF	2348.0000	IN.
◇	.600	SI-2	.000	S3-4	.000	XMRP	1339.9100	IN. XC
△	.700	SS-6	.000	IORB	4.000	YMRP	.0000	IN. YC
						ZMRP	190.7500	IN. ZC
						SCALE	.0300	

CARRIER FRL ANGLE OF ATTACK, ALPHA, DEG.

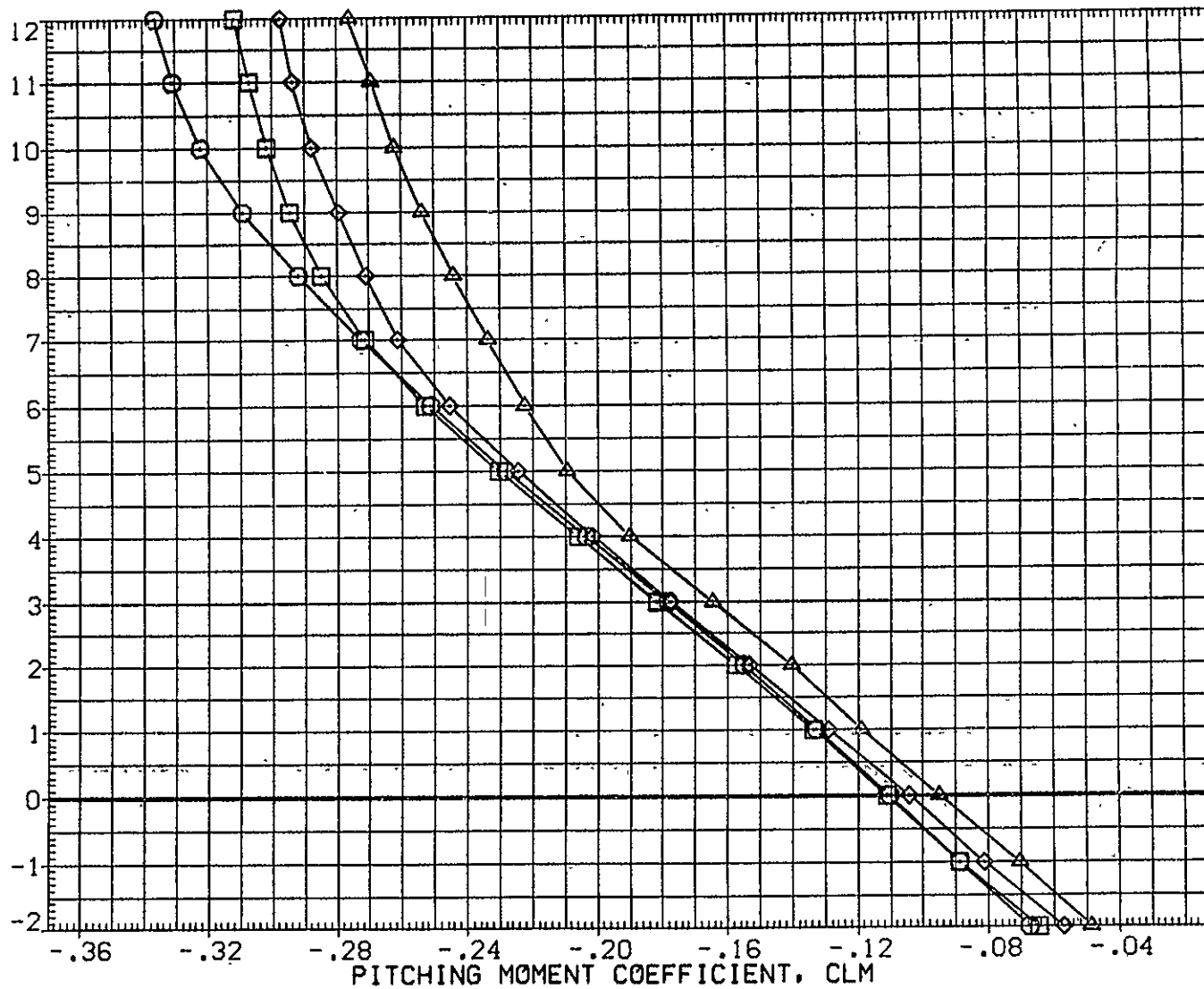


FIG. 89 747+ORB(4 DEG)+TIP FINS, FLAPS UP FERRY, ELEV=+10 DEG

CA5 K1 FO H15.6 V9.1 MINUS ORB TC5 AT38.3 (BGM120)

SYMBOL	MACH	BETA	PARAMETRIC VALUES	STAB	
○	.300		.000	-2.000	
□	.499	RUD-U	.000	.000	
◇	.600	ELV-1B	10.000	ELV-OB	13.000
△	.700	S1-2	.000	S3-4	.000
		S5-6	.000	IORB	4.000

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

INCREMENTAL LIFT FORCE COEFFICIENT(STABILITY AXIS), DCL

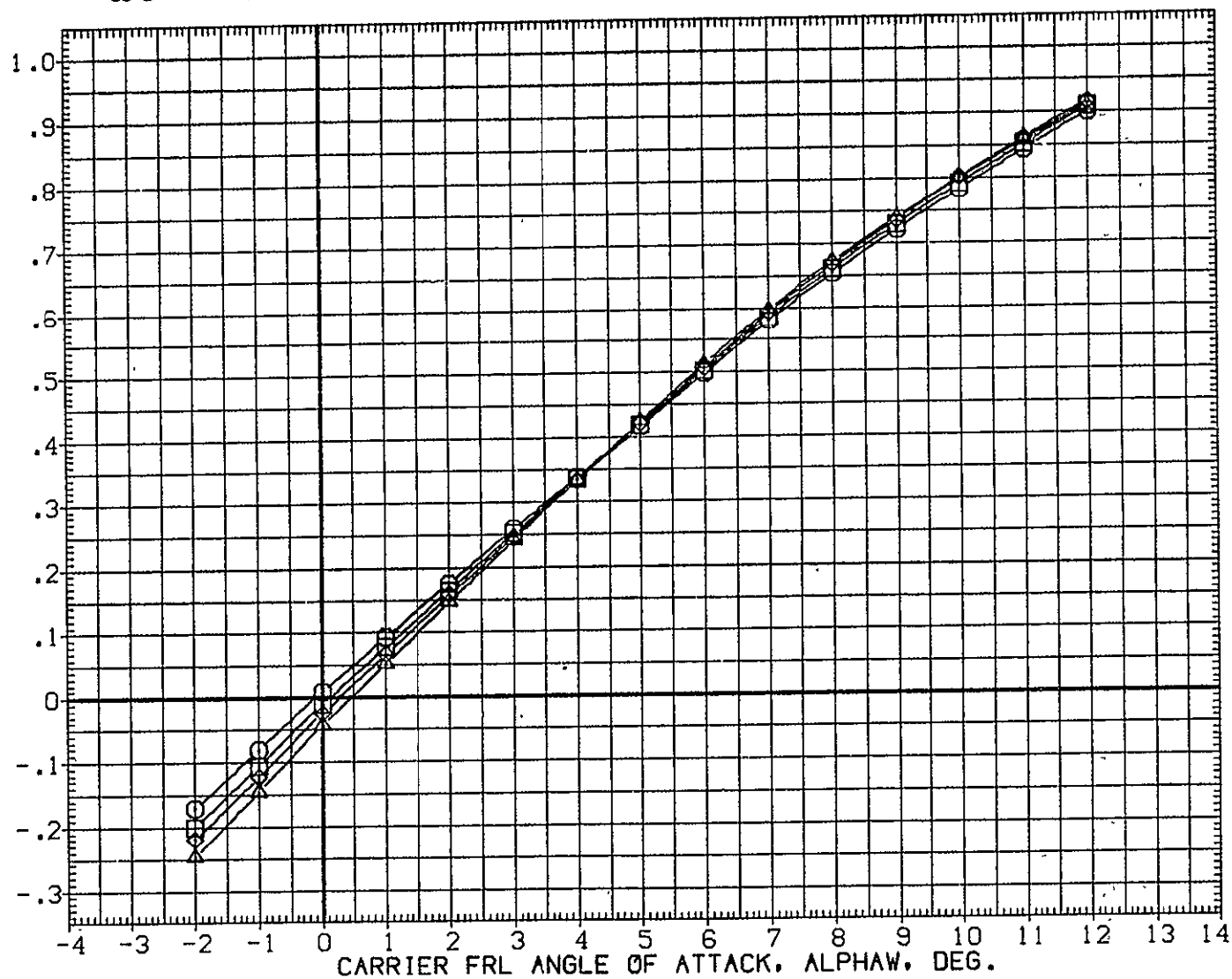


FIG. 90 747+ORB(4 DEG)+TIP FINS, FLAPS UP FERRY, ELEV=+10 DEG

747

SYMBOL	MACH	BETA	PARAMETRIC VALUES
○	.300	.000	STAB -2.000
□	.499	.000	RUD-L .000
◇	.600	10.000	ELV-OB 13.000
△	.700	.000	S3-4 .000
		.000	SS-6 .000
		.000	10RB 4.000

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

INCREMENTAL LIFT FORCE COEFFICIENT(STABILITY AXIS), DCL

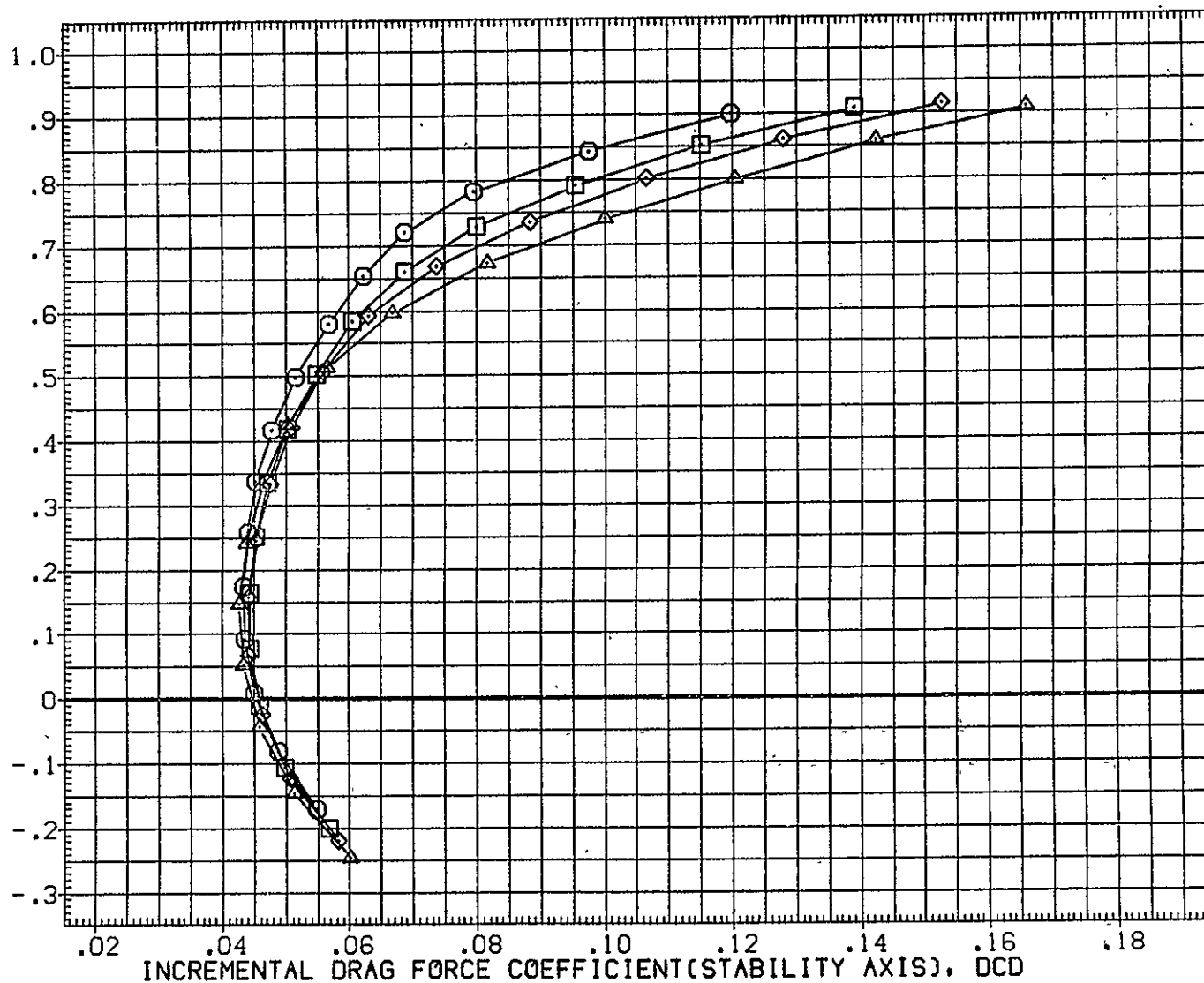


FIG. 90 747+ORB(4 DEG)+TIP FINS, FLAPS UP FERRY, ELEV=+10 DEG

747

CA5 K1 FO H15.6 V9.1 MINUS ORB TC5 AT38.3 (BGM120)

SYMBOL	MACH	PARAMETRIC VALUES			
○	.300	BETA	.000	STAB	-2.000
□	.499	RUD-U	.000	RUD-L	.000
◇	.600	ELV-1B	10.000	ELV-OB	13.000
△	.700	S1-2	.000	S3-4	.000
		S5-6	.000	10RB	4.000

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

INCREMENTAL LIFT FORCE COEFFICIENT(STABILITY AXIS), DCL

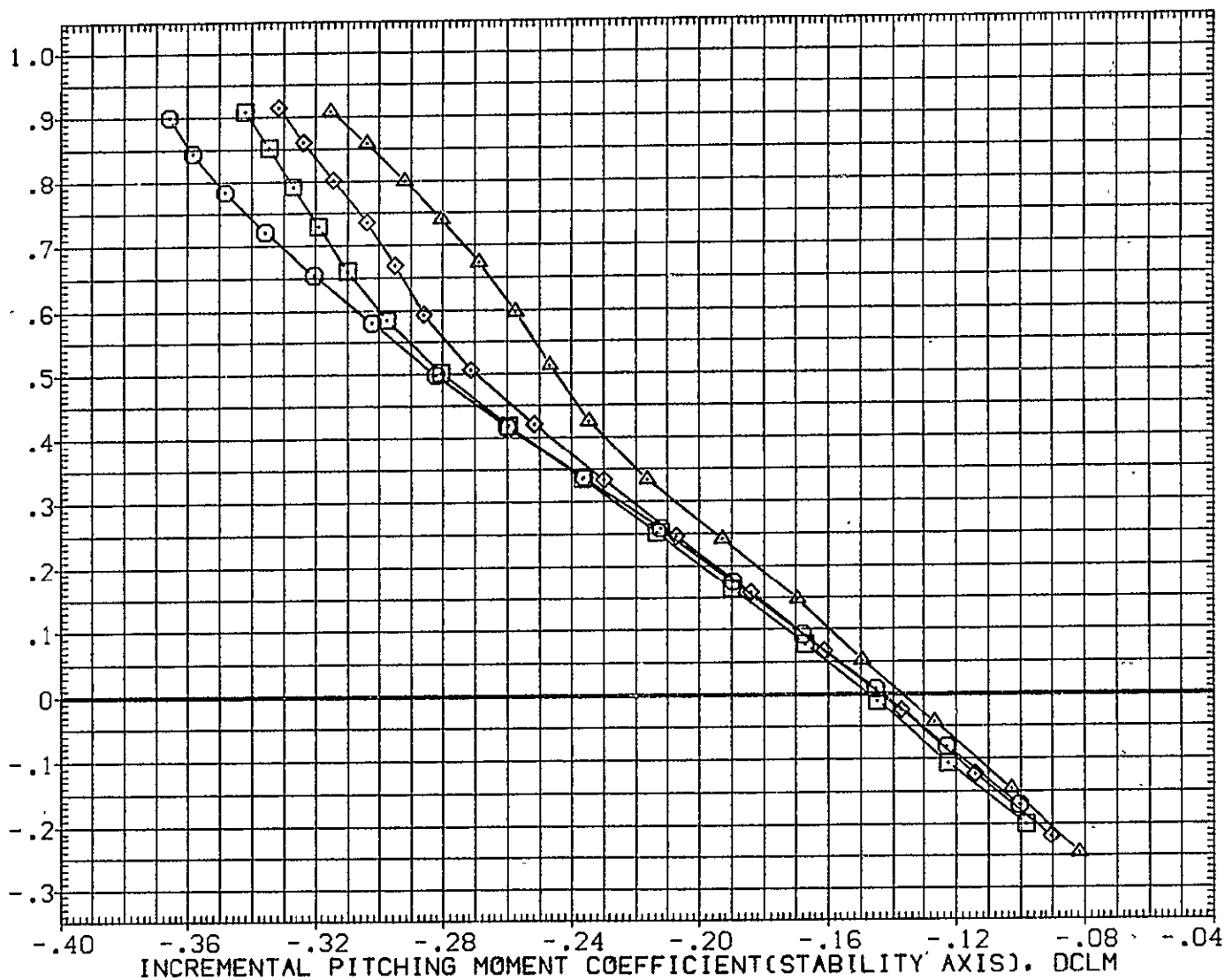


FIG. 90 747+ORB(4 DEG)+TIP FINS, FLAPS UP FERRY, ELEV=+10 DEG

747

SYMBOL
 ○
 ◇
 □
 △

MACH	PARAMETRIC VALUES			
.300	BETA	.000	STAB	-2.000
.499	RUD-U	.000	RUD-L	.000
.600	ELV-1B	10.000	ELV-0B	13.000
.700	S1-2	.000	S3-4	.000
	S5-6	.000	10RB	4.000

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

CARRIER FRL ANGLE OF ATTACK, ALPHA, DEG.

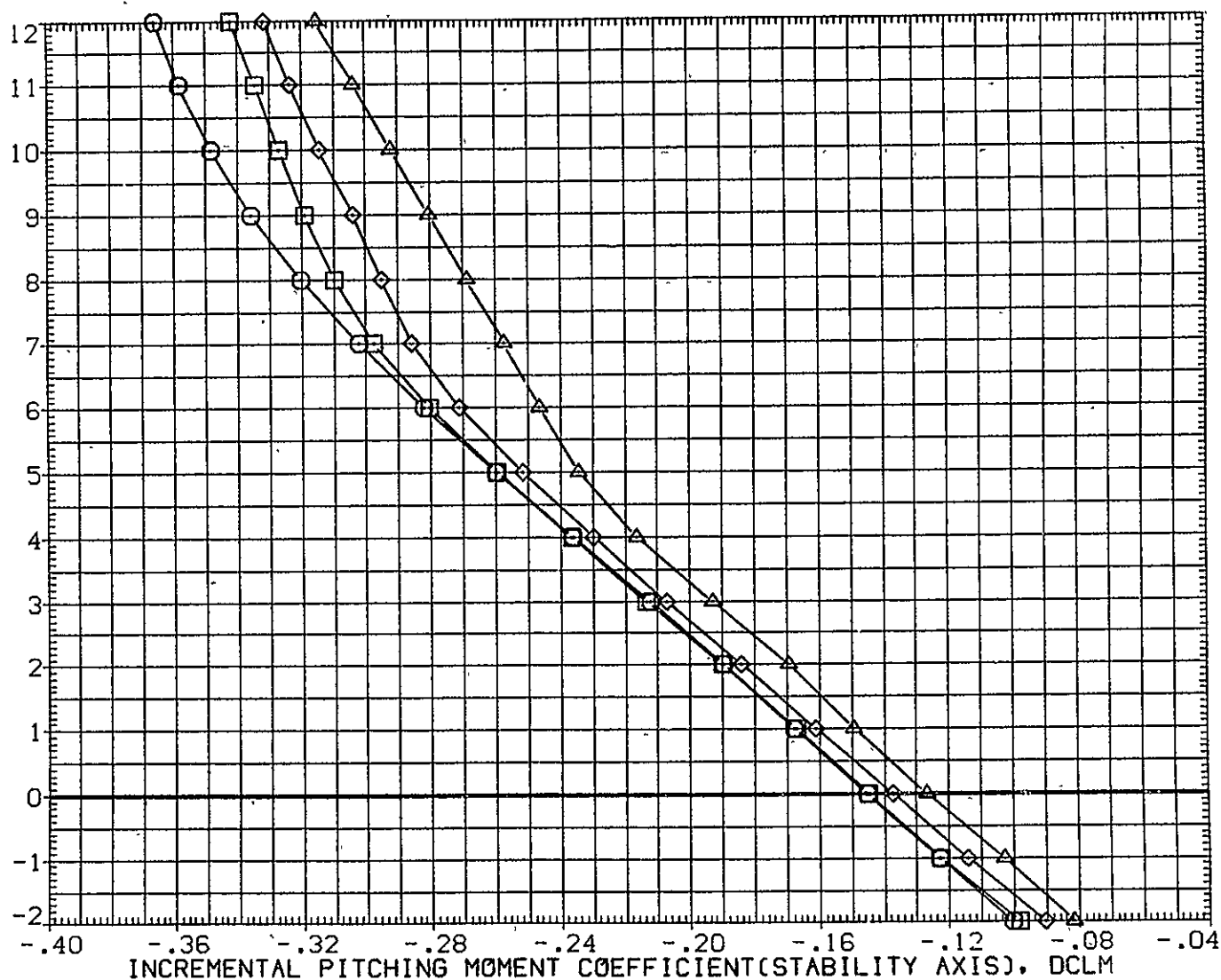


FIG. 90 747+0RB(4 DEG)+TIP FINS, FLAPS UP FERRY, ELEV=+10 DEG

747

CAS 0RB TC5 AT38.3 (PRES. K1 FO H15.6 V9.1)(YGM120)

SYMBOL
○
□
◇
△

MACH	PARAMETRIC VALUES			
.299	BETA	.000	STAB	-2.000
.499	RUD-U	.000	RUD-L	.000
.600	ELV-1B	10.000	ELV-0B	13.000
.700	S1-2	.000	S3-4	.000
	S5-6	.000	IORB	4.000

REFERENCE INFORMATION		
SREF	2690.0000	SG.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN. X0
YMRP	.0000	IN. Y0
ZMRP	375.0000	IN. Z0
SCALE	.0308	

LIFT COEFFICIENT, CL

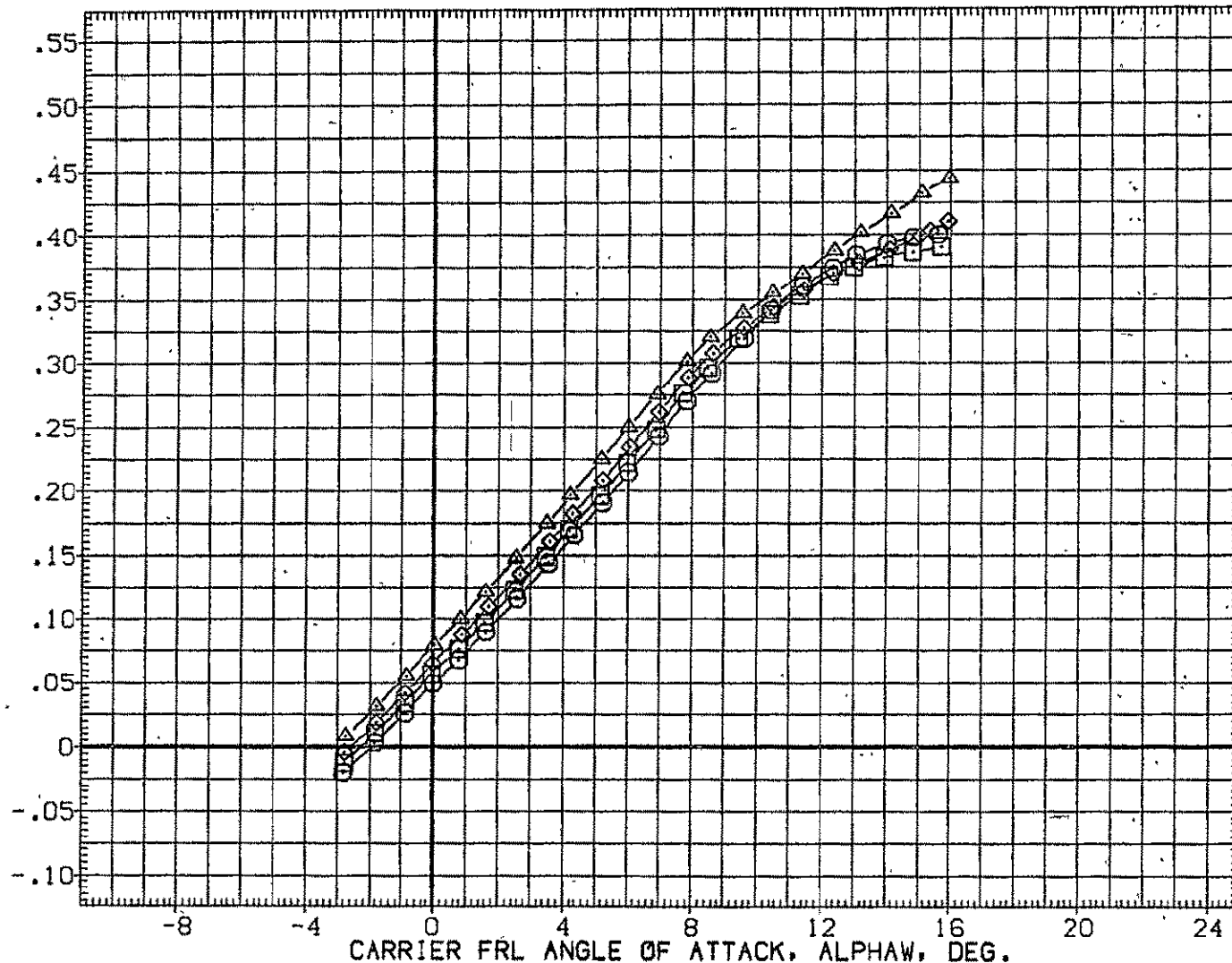


FIG. 91 747+0RB(4 DEG)+TIP FINS, FLAPS UP FERRY, ELEV=+10 DEG

0RB

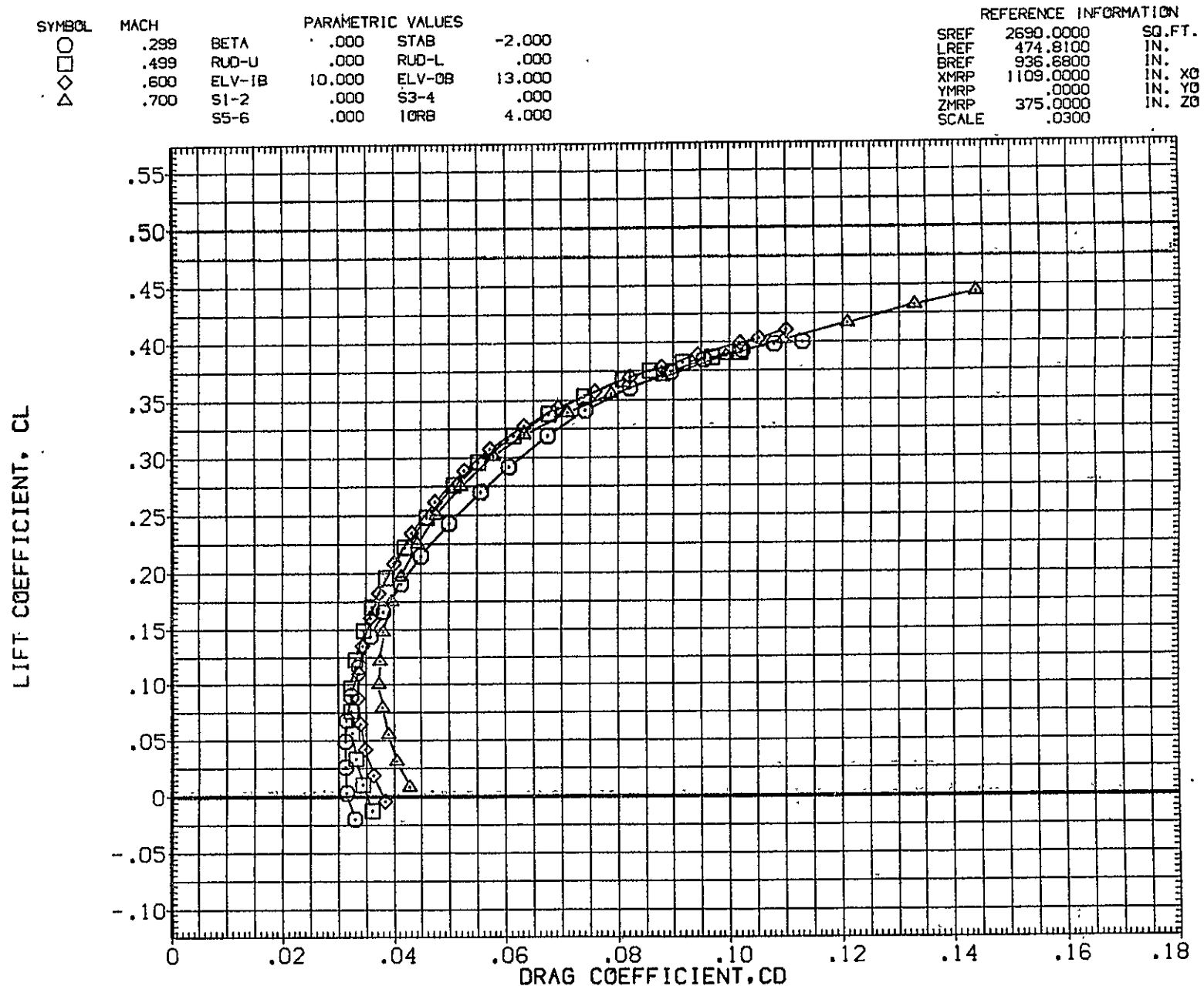


FIG. 91 747+0RB(4 DEG)+TIP FINS, FLAPS UP FERRY, ELEV=+10 DEG

0RB

CAS 0RB TC5 AT38.3 (PRES. K1 FO H15.6 V9.1)(YGM120)

SYMBOL	MACH	PARAMETRIC VALUES				REFERENCE INFORMATION		
○	.299	BETA	.000	STAB	-2.000	SREF	2690.0000	SQ.FT.
□	.499	RUD-U	.000	RUD-L	.000	LREF	474.8100	IN.
◇	.600	ELV-1B	10.000	ELV-0B	13.000	BREF	936.6800	IN.
△	.700	S1-2	.000	S3-4	.000	XMRP	1109.0000	IN. X0
		S5-6	.000	10RB	4.000	YMRP	.0000	IN. Y0
						ZMRP	375.0000	IN. Z0
						SCALE	.0300	

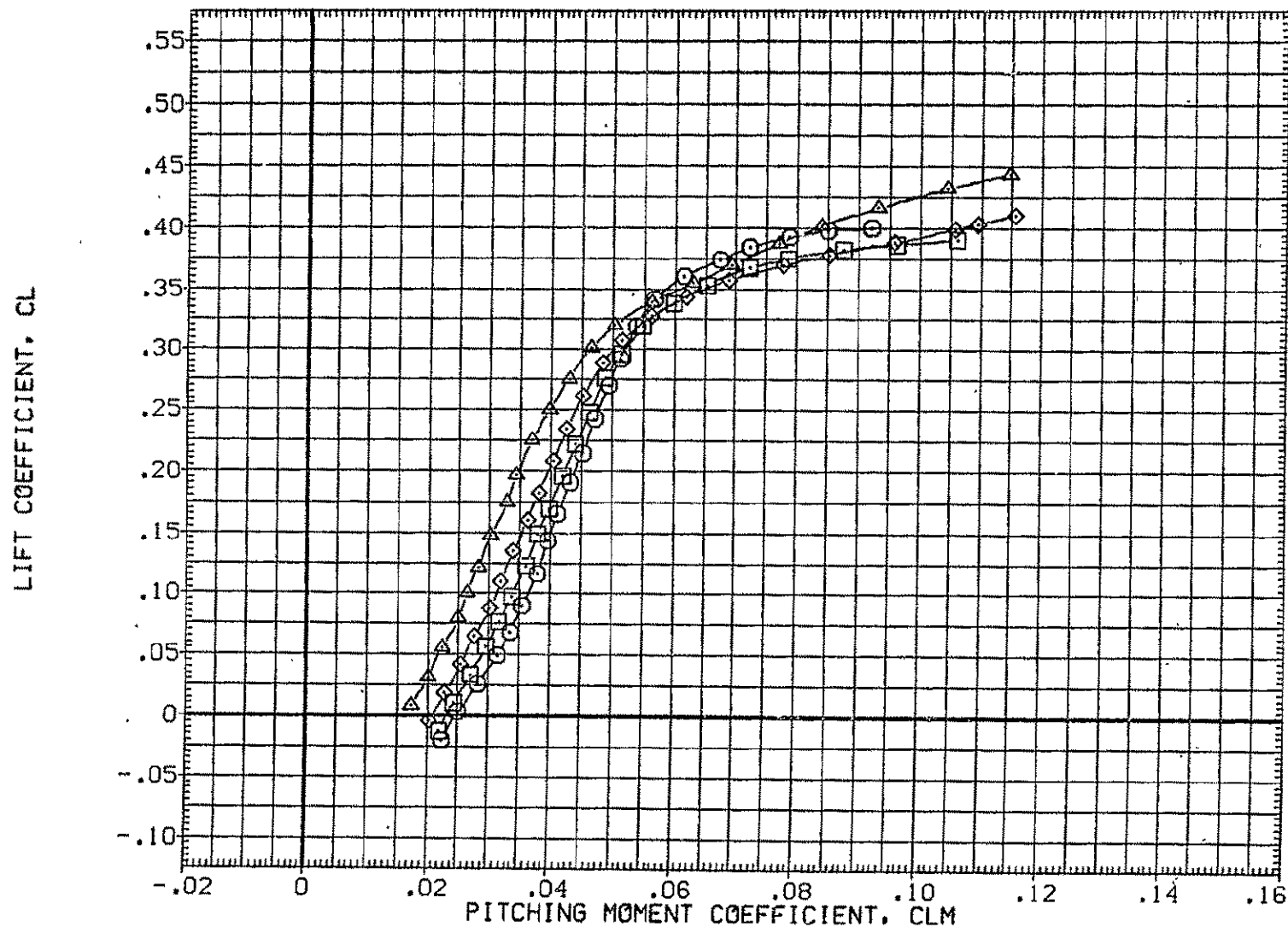


FIG. 91 747+0RB(4 DEG)+TIP FINS, FLAPS UP FERRY, ELEV=+10 DEG

0RB

SYMBOL	MACH	PARAMETRIC VALUES			
○	.299	BETA	.000	STAB	-2.000
□	.499	RUD-U	.000	RUD-L	.000
◇	.600	ELV-18	10.000	ELV-08	13.000
△	.700	S1-2	.000	S3-4	.000
		S5-6	.000	ICRB	4.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN. X0
YMRP	.0000	IN. Y0
ZMRP	375.0000	IN. Z0
SCALE	.0300	

CARRIER FRL ANGLE OF ATTACK, ALPHA, DEG.

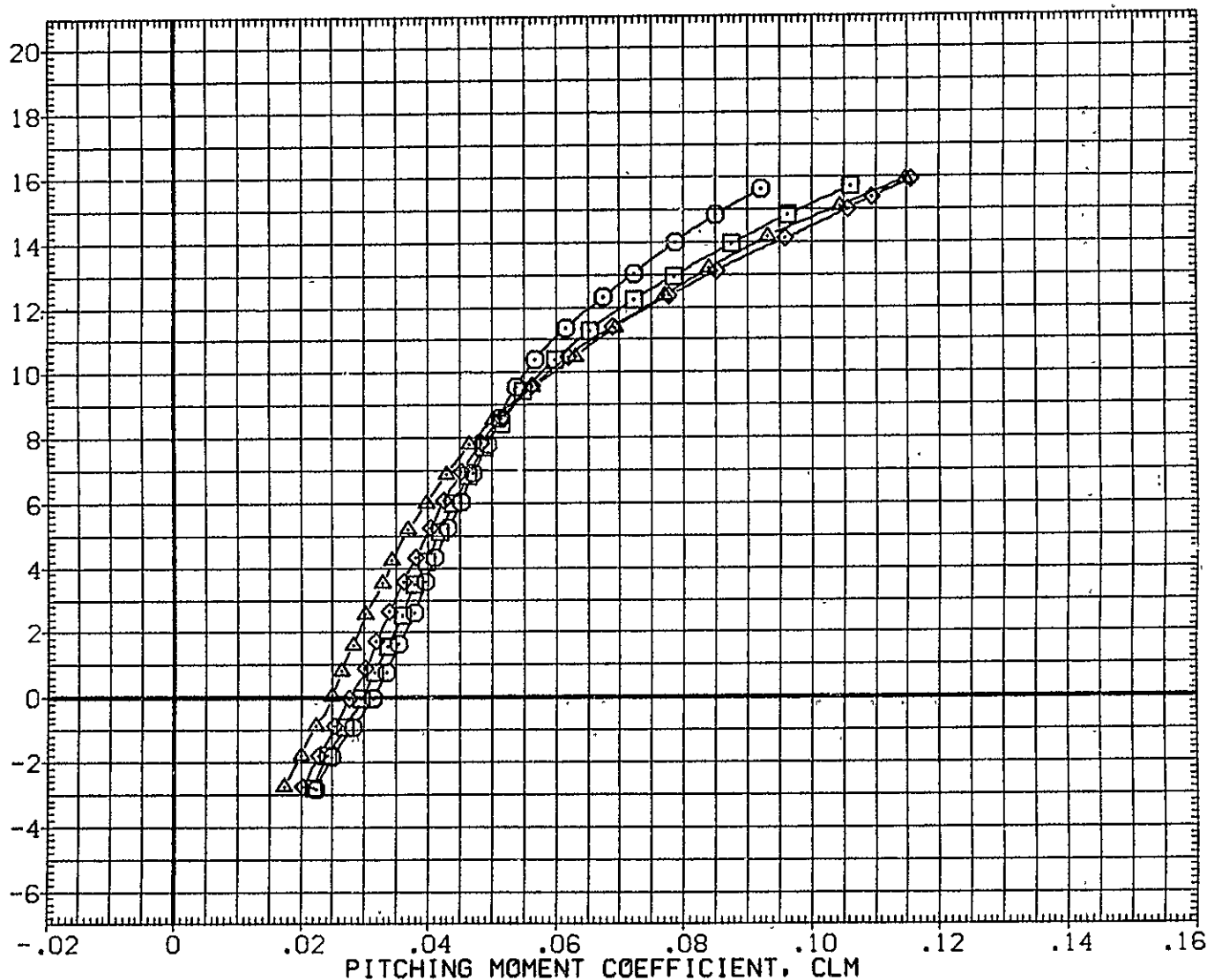


FIG. 91 747+ORB(4 DEG)+TIP FINS, FLAPS UP FERRY, ELEV=+10 DEG

ORB

CA5 K1 F0 H15.1A V9.1 (PLUS. 0RB TC5 AT38.3)(RGM125)

SYMBOL	MACH	BETA	PARAMETRIC VALUES	STAB	REFERENCE INFORMATION
○	.300		.000	-2.000	SREF 5500.0000 SQ.FT.
□	.500	RUD-U	.000	.000	LREF 327.8000 IN.
◇	.600	ELV-1B	.000	ELV-0B 3.000	BREF 2348.0000 IN.
△	.700	S1-2	.000	S3-4 .000	XMRP 1339.9100 IN. XC
		S5-6	.000	10RB 4.000	YMRP .0000 IN. YC
					ZMRP 190.7500 IN. ZC
					SCALE .0300

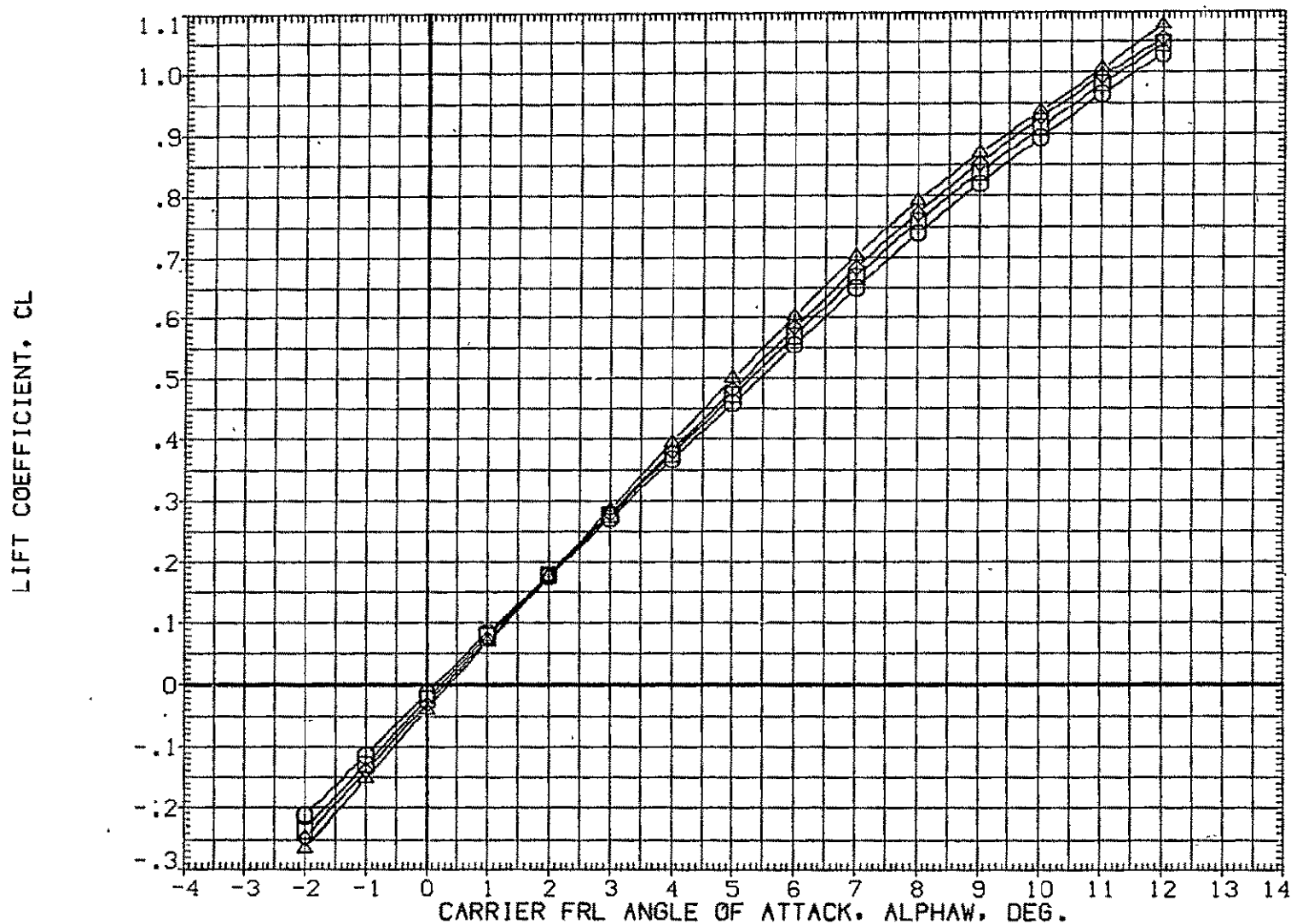


FIG. 92 747+0RB(4 DEG), BASIC TAIL, FLAPS UP FERRY(S=-2)

SYMBOL	MACH	PARAMETRIC VALUES				REFERENCE INFORMATION		
○	.300	BETA	.000	STAB	-2.000	SREF	5500.0000	SQ.FT.
□	.500	RUD-U	.000	RUD-L	.000	LREF	327.8000	IN.
◇	.600	ELV-IB	.000	ELV-OB	3.000	BREF	2348.0000	IN.
△	.700	S1-2	.000	S3-4	.000	XMRP	1339.9100	IN. XC
		S5-6	.000	I0RB	4.000	YMRP	.0000	IN. YC
						ZMRP	190.7500	IN. ZC
						SCALE	.0300	

LIFT COEFFICIENT, CL

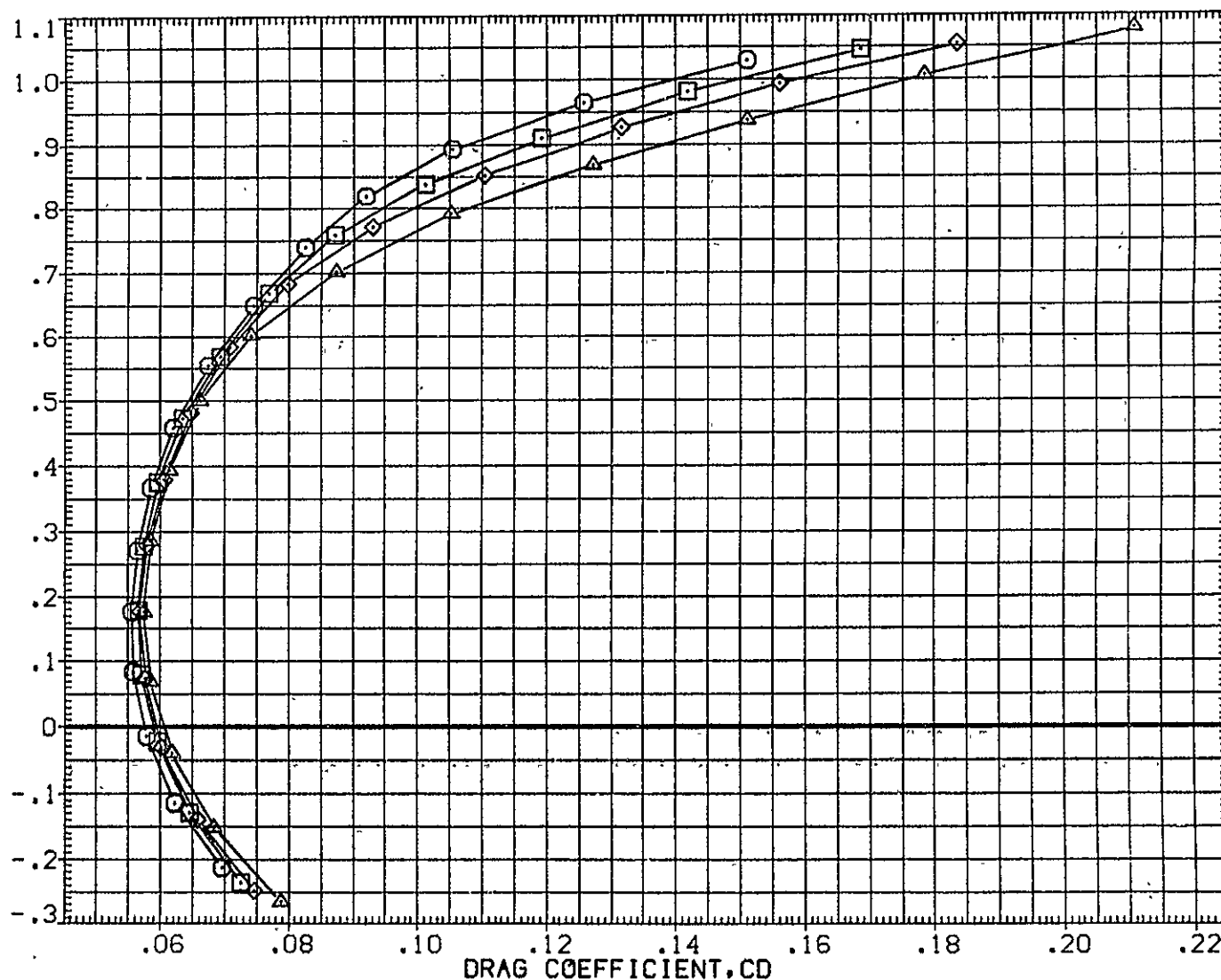


FIG. 92 747+0RB(4 DEG), BASIC TAIL, FLAPS UP FERRY(S=-2)

CA5 K1 F0 H15.1A V9.1 (PLUS. ORB TC5 AT38.3)(RGM125)

SYMBOL	MACH	PARAMETRIC VALUES				REFERENCE INFORMATION		
○	.300	BETA	.000	STAB	-2.000	SREF	5500.0000	50.FT.
□	.500	RUD-U	.000	RUD-L	.000	LREF	327.8000	IN.
◇	.600	ELV-1B	.000	ELV-OB	3.000	BREF	2348.0000	IN.
△	.700	S1-2	.000	S3-4	.000	XMRP	1339.9100	IN. XC
		S5-6	.000	10RB	4.000	YMRP	.0000	IN. YC
						ZMRP	190.7500	IN. ZC
						SCALE	.0300	

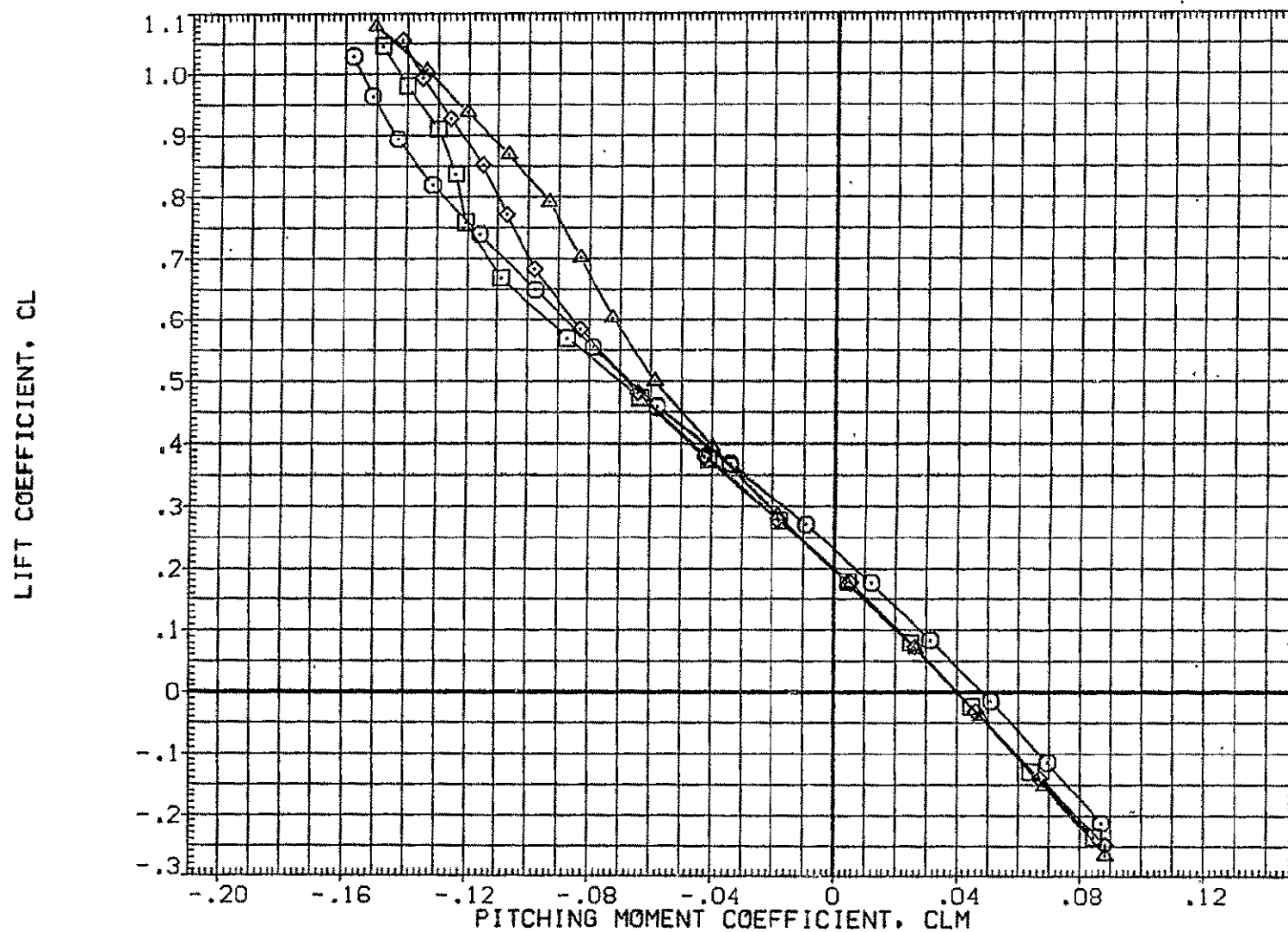


FIG. 92 747+ORB(4 DEG), BASIC TAIL, FLAPS UP FERRY(S=-2)

SYMBOL	MACH	PARAMETRIC VALUES			
○	.300	BETA	.000	STAB	-2.000
□	.500	RUD-U	.000	RUD-L	.000
◇	.600	ELV-1B	.000	ELV-0B	3.000
△	.700	S1-2	.000	S3-4	.000
		S5-6	.000	10RB	4.000

REFERENCE INFORMATION		
SREF	5500.0000	50.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

CARRIER FRL ANGLE OF ATTACK, ALPHAW, DEG.

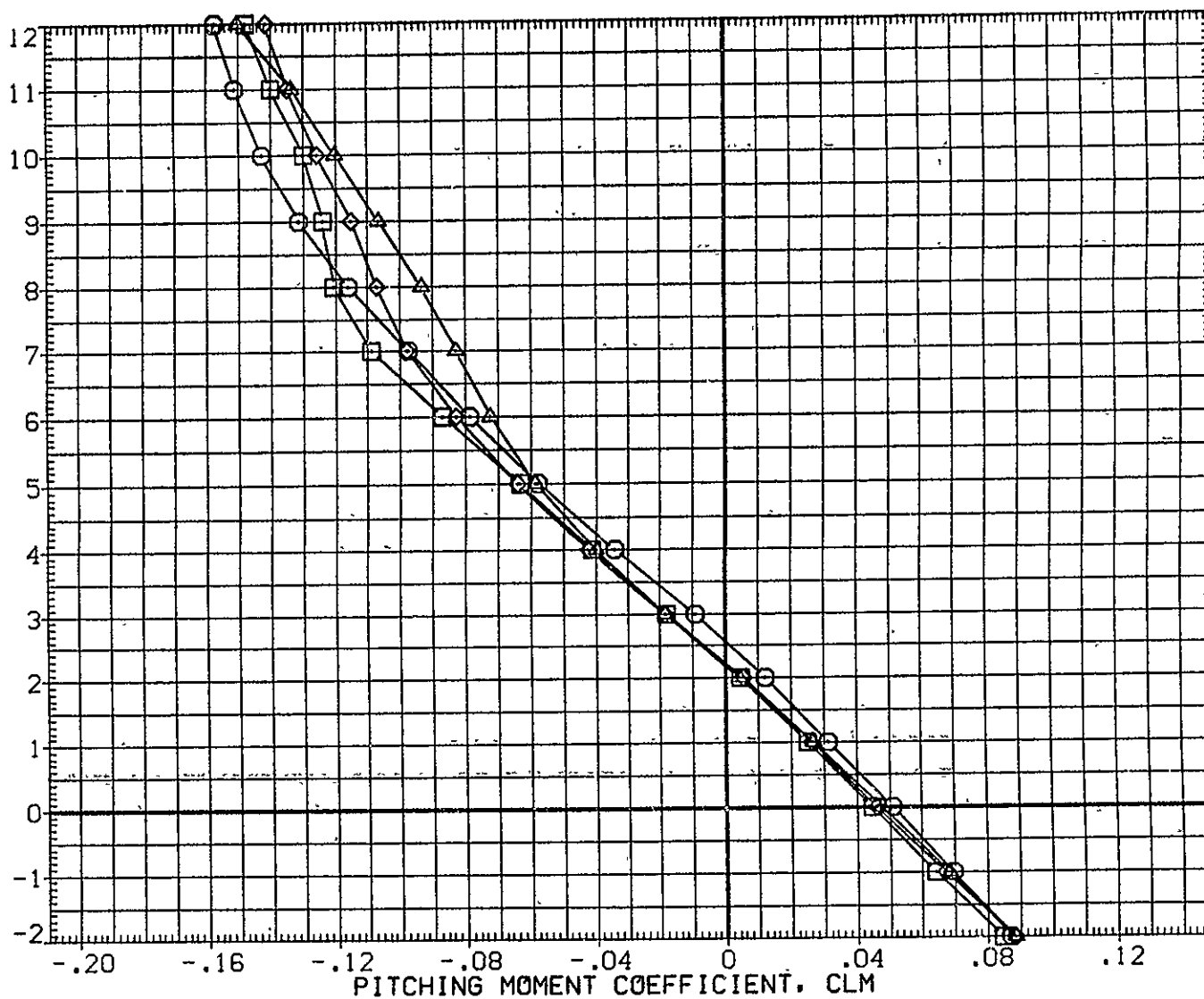


FIG. 92 747+0RB(4 DEG), BASIC TAIL, FLAPS UP FERRY(S=-2)

CA5 K1 F0 H15.1A V9.1 MINUS ORB TC5 AT38.3 (BGM125)

SYMBOL	MACH	PARAMETRIC VALUES
○	.300	BETA .000 STAB -2.000
□	.500	RUD-U .000 RUD-L .000
◇	.600	ELV-IB .000 ELV-OB 3.000
△	.700	S1-2 .000 S3-4 .000
		S5-6 .000 IORB 4.000

REFERENCE INFORMATION		
SREF	5500.0000	SO.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

INCREMENTAL LIFT FORCE COEFFICIENT(STABILITY AXIS), DCL

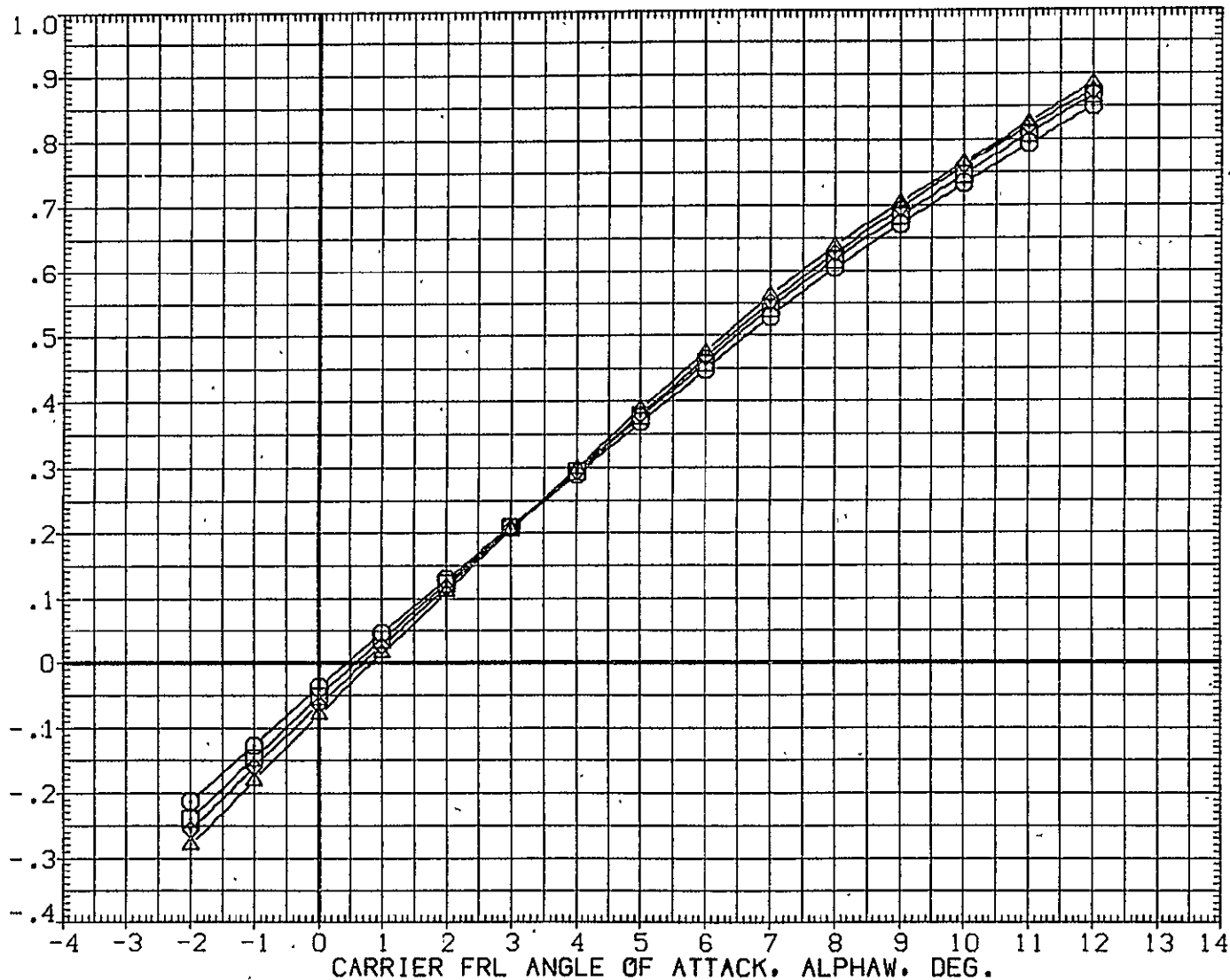


FIG. 93 747+ORB(4 DEG), BASIC TAIL, FLAPS UP FERRY(S=-2)

747

SYMBOL	MACH	PARAMETRIC VALUES			
○	.300	BETA	.000	STAB	-2.000
□	.500	RUD-U	.000	RUD-L	.000
◇	.600	ELV-1B	.000	ELV-0B	3.000
△	.700	S1-2	.000	S3-4	.000
		S5-6	.000	IORB	4.000

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

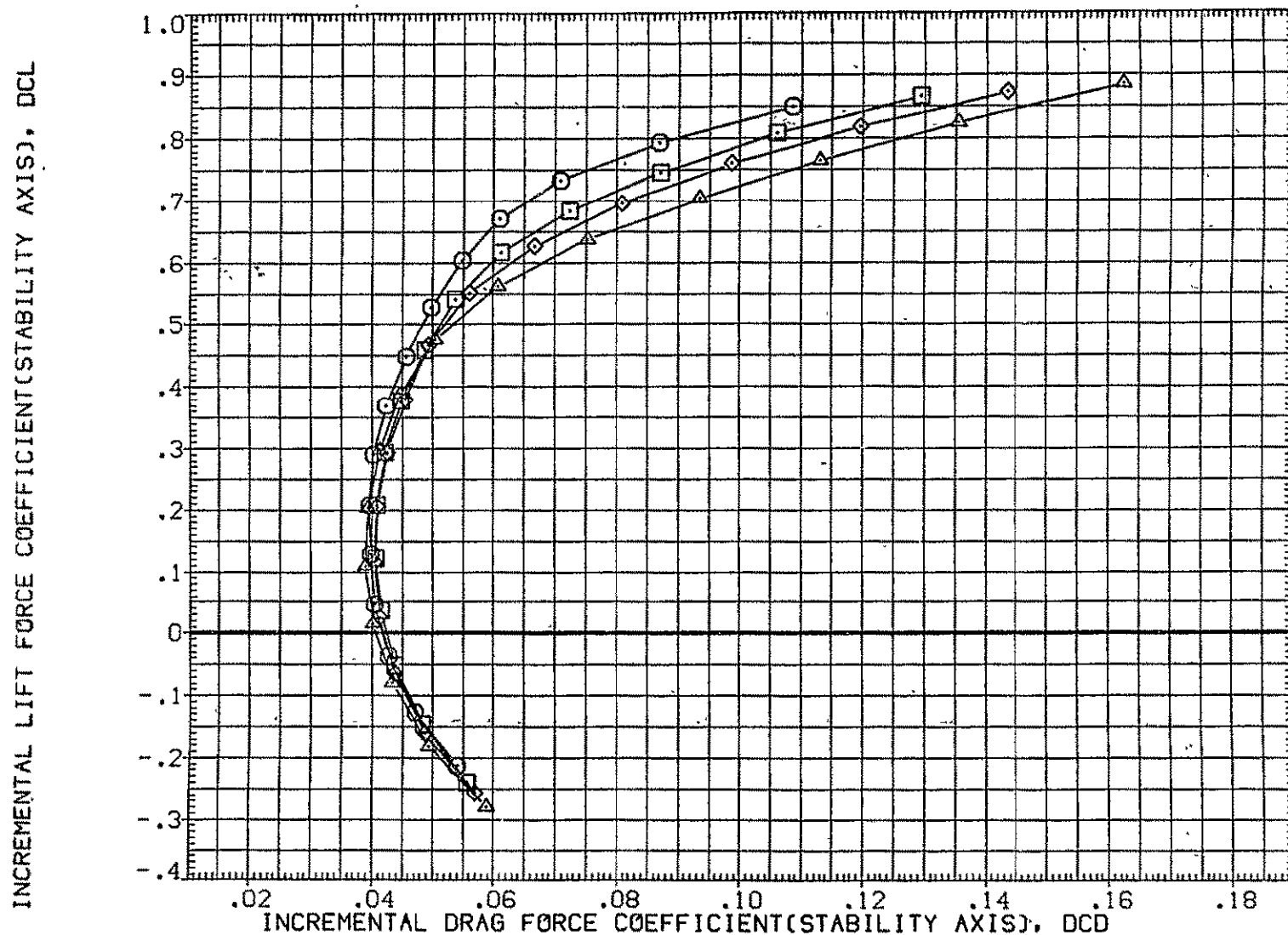


FIG. 93 747+ORB(4 DEG), BASIC TAIL, FLAPS UP FERRY(S=-2)

747

CA5 K1 F0 H15.1A V9.1 MINUS 0RB TC5 AT38.3 (BGM125)

SYMBOL

○
□
◇
△

MACH

.300
.500
.600
.700

BETA
RUD-U
ELV-IB
S1-2
S5-6

PARAMETRIC VALUES

.000 STAB -2.000
.000 RUD-L .000
.000 ELV-OB 3.000
.000 S3-4 .000
.000 10RB 4.000

REFERENCE INFORMATION

SREF 5500.0000 SQ.FT.
LREF 327.8000 IN.
BREF 2348.0000 IN.
XMRP 1339.9100 IN. XC
YMRP .0000 IN. YC
ZMRP 190.7500 IN. ZC
SCALE .0300

INCREMENTAL LIFT FORCE COEFFICIENT(STABILITY AXIS), DCL

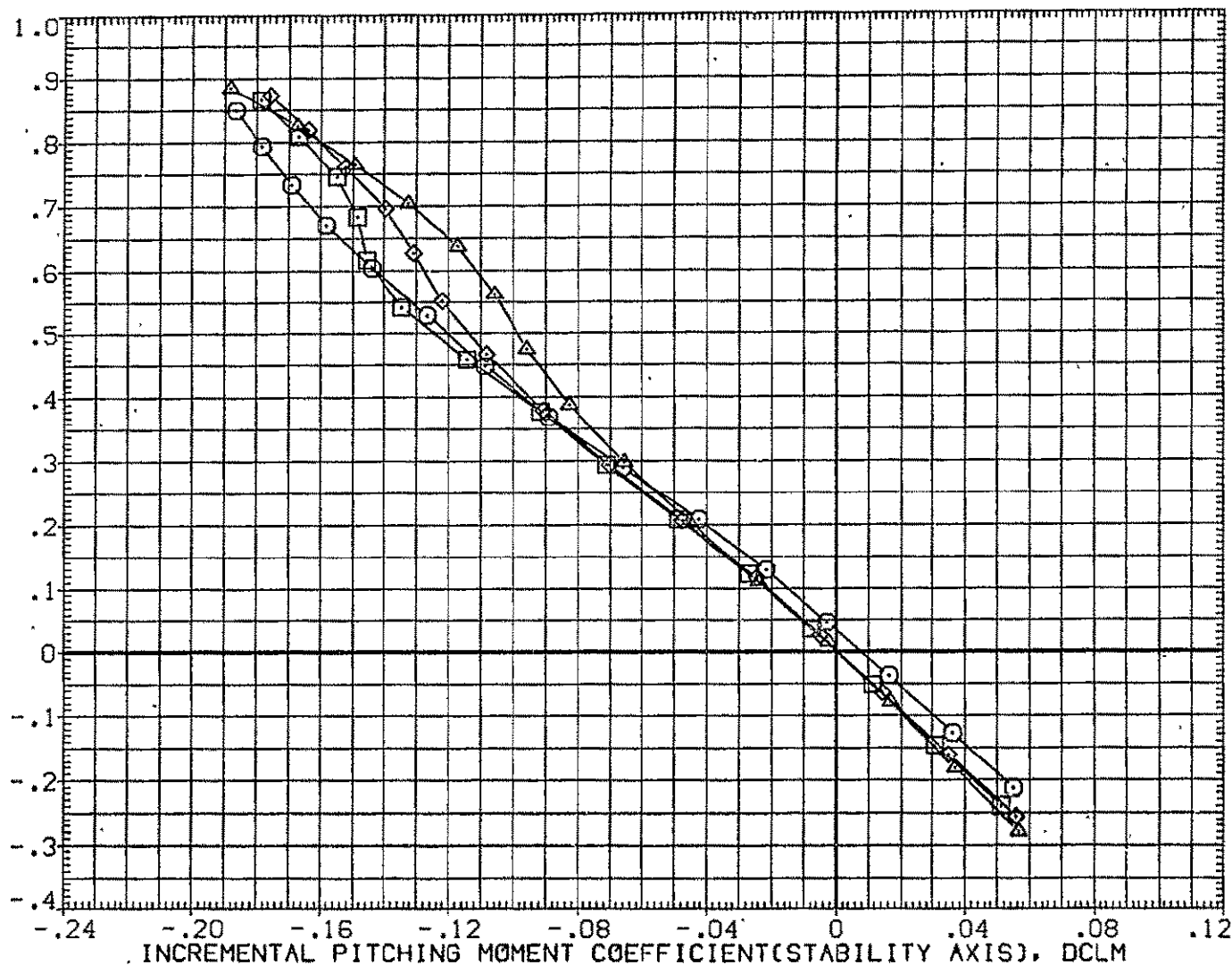


FIG. 93 747+0RB(4 DEG), BASIC TAIL, FLAPS UP FERRY(S=-2)

747

SYMBOL	MACH	BETA	PARAMETRIC VALUES
○	.300	.000	STAB -2.000
□	.500	.000	RUD-U .000 RUD-L .000
◇	.600	.000	ELV-IB .000 ELV-OB 3.000
△	.700	.000	S1-2 .000 S3-4 .000
		.000	SS-6 .000 IORB 4.000

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

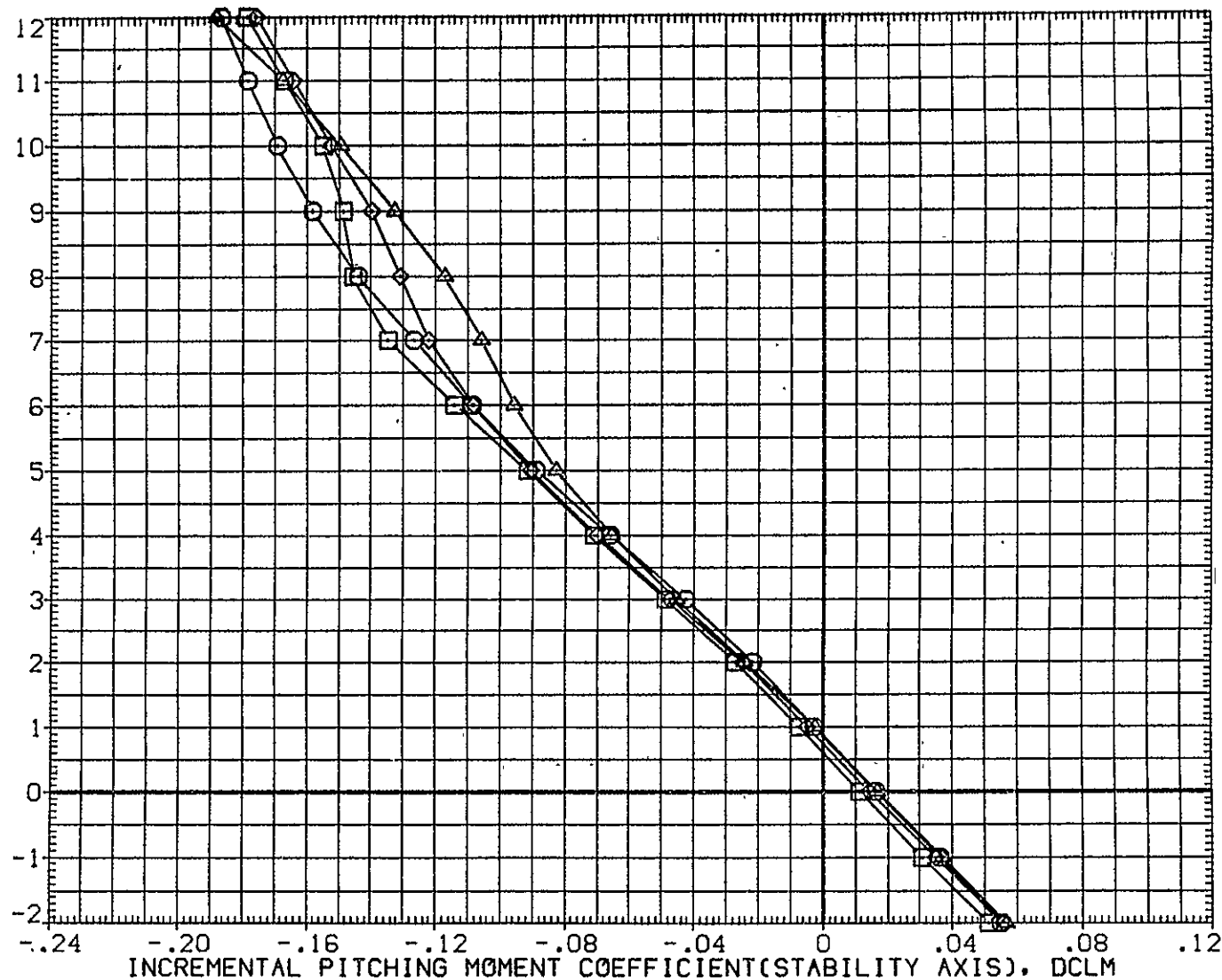
CARRIER FRL ANGLE OF ATTACK, ALPHA_{AW}, DEG.

FIG. 93 747+0RB(4 DEG), BASIC TAIL, FLAPS UP FERRY(S=-2)

747

CA5 0RB TC5 AT38.3 (PRES. K1 FO H15.1A V9.1)(YGM125)

SYMBOL	MACH	PARAMETRIC VALUES			
○	.299	BETA	.000	STAB	-2.000
□	.499	RUD-U	.000	RUD-L	.000
◇	.599	ELV-IB	.000	ELV-OB	3.000
△	.699	S1-2	.000	S3-4	.000
		S5-6	.000	IORB	4.000

REFERENCE INFORMATION		
SREF	2690.0000	SO.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN. X0
YMRP	.0000	IN. Y0
ZMRP	375.0000	IN. Z0
SCALE	.0300	

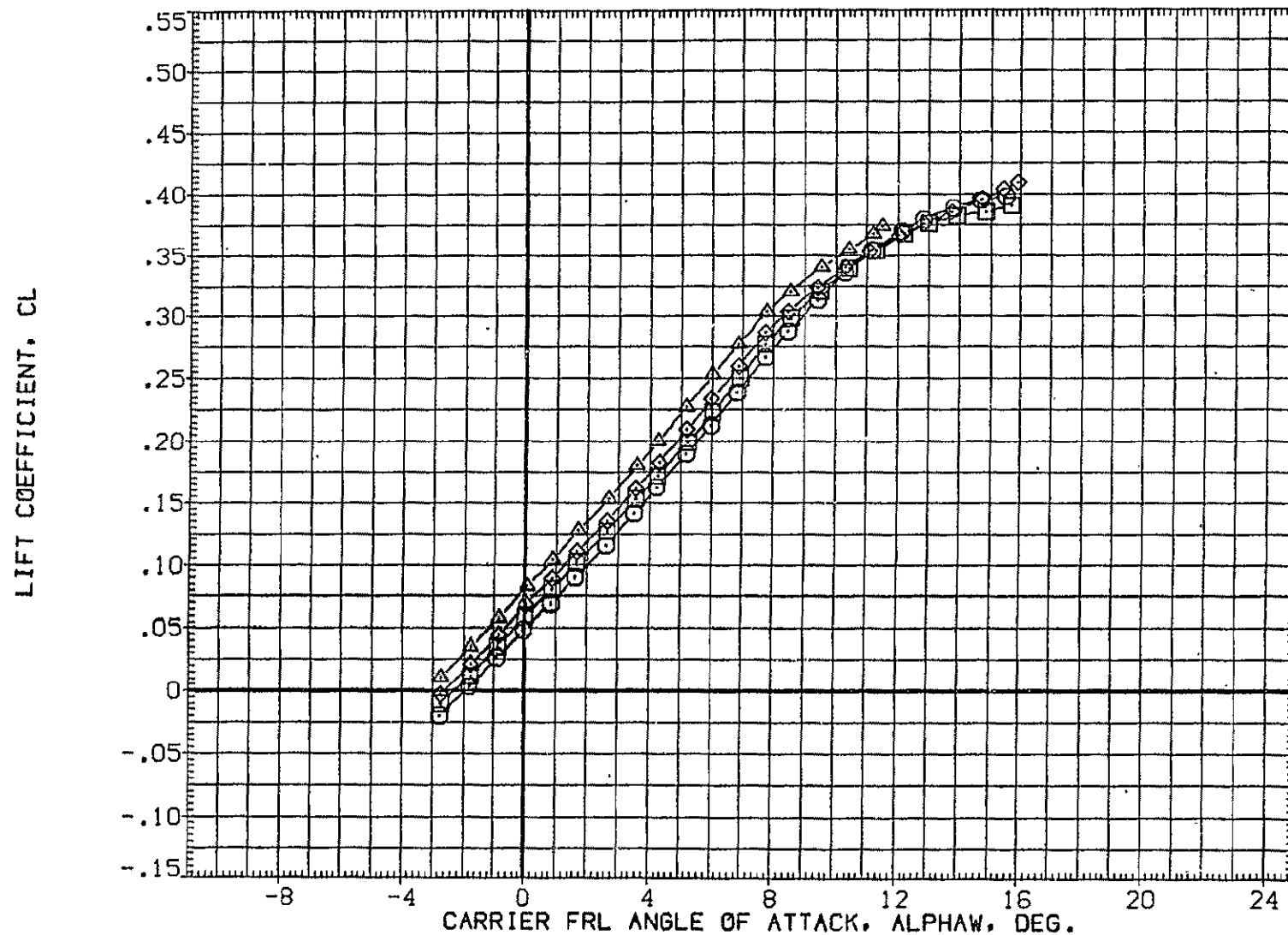


FIG. 94 747+0RB(4 DEG), BASIC TAIL, FLAPS UP FERRY(S=-2)

0RB

SYMBOL	MACH	PARAMETRIC VALUES				REFERENCE INFORMATION		
○	.299	BETA	.000	STAB	-2.000	SREF	2690.0000	SQ.FT.
□	.499	RUD-U	.000	RUD-L	.000	LREF	474.8100	IN.
◇	.599	ELV-1B	.000	ELV-0B	3.000	BREF	936.6800	IN.
△	.699	S1-2	.000	S3-4	.000	XMRP	1109.0000	IN. X0
		S5-6	.000	IORB	4.000	YMRP	.0000	IN. Y0
						ZMRP	375.0000	IN. Z0
						SCALE	.0300	

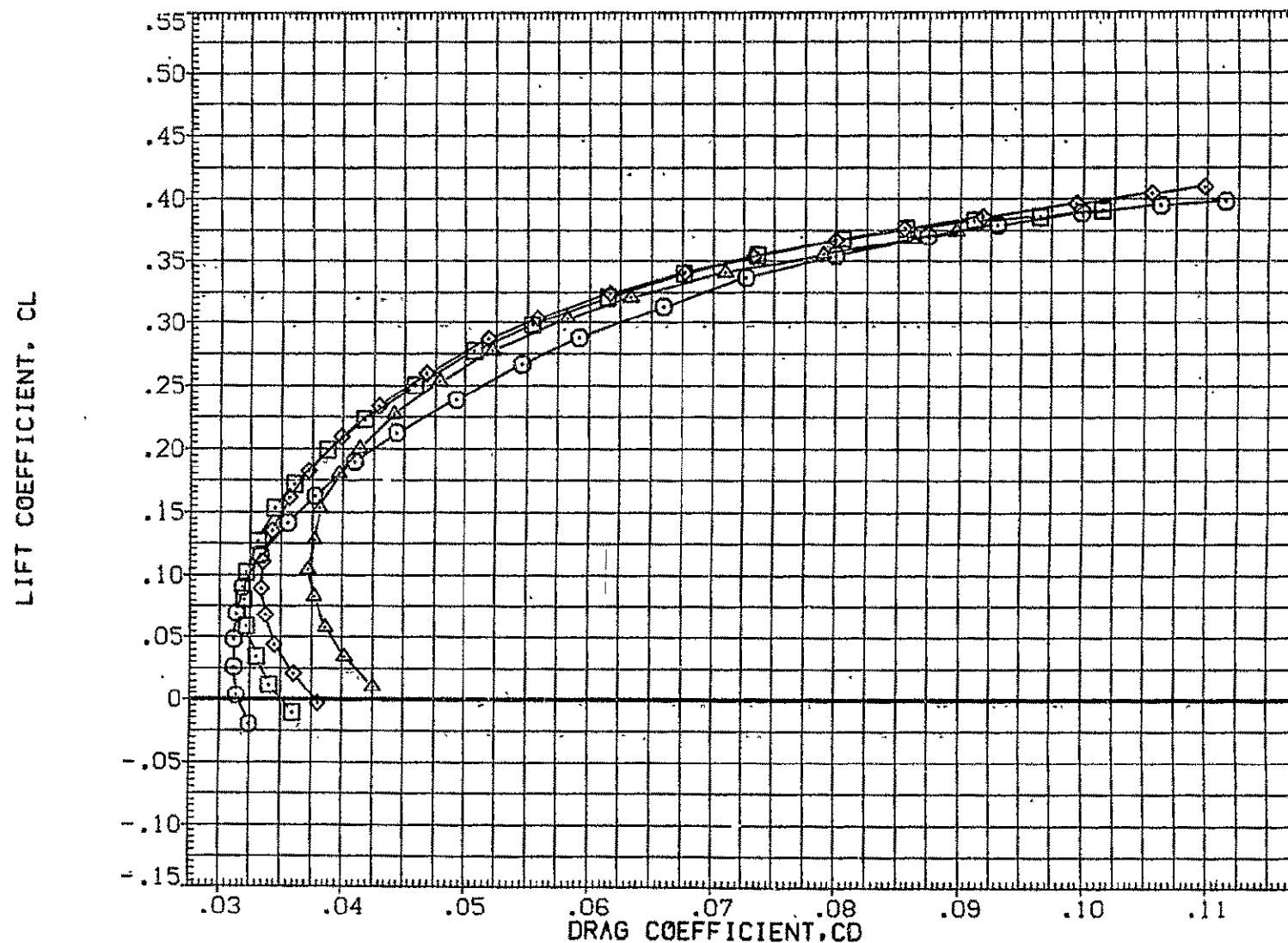


FIG. 94 747+ORB(4 DEG), BASIC TAIL, FLAPS UP FERRY(S=-2)

ORB

CA5 ORB TC5 AT38.3 (PRES. K1 F0 H15.1A V9.1)(YGM125)

SYMBOL	MACH	PARAMETRIC VALUES			
○	.299	BETA	.000	STAB	-2.000
□	.499	RUD-U	.000	RUD-L	.000
◇	.599	ELV-1B	.000	ELV-0B	3.000
△	.699	S1-2	.000	S3-4	.000
		S5-6	.000	10RB	4.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN. X0
YMRP	.0000	IN. Y0
ZMRP	375.0000	IN. Z0
SCALE	.0300	

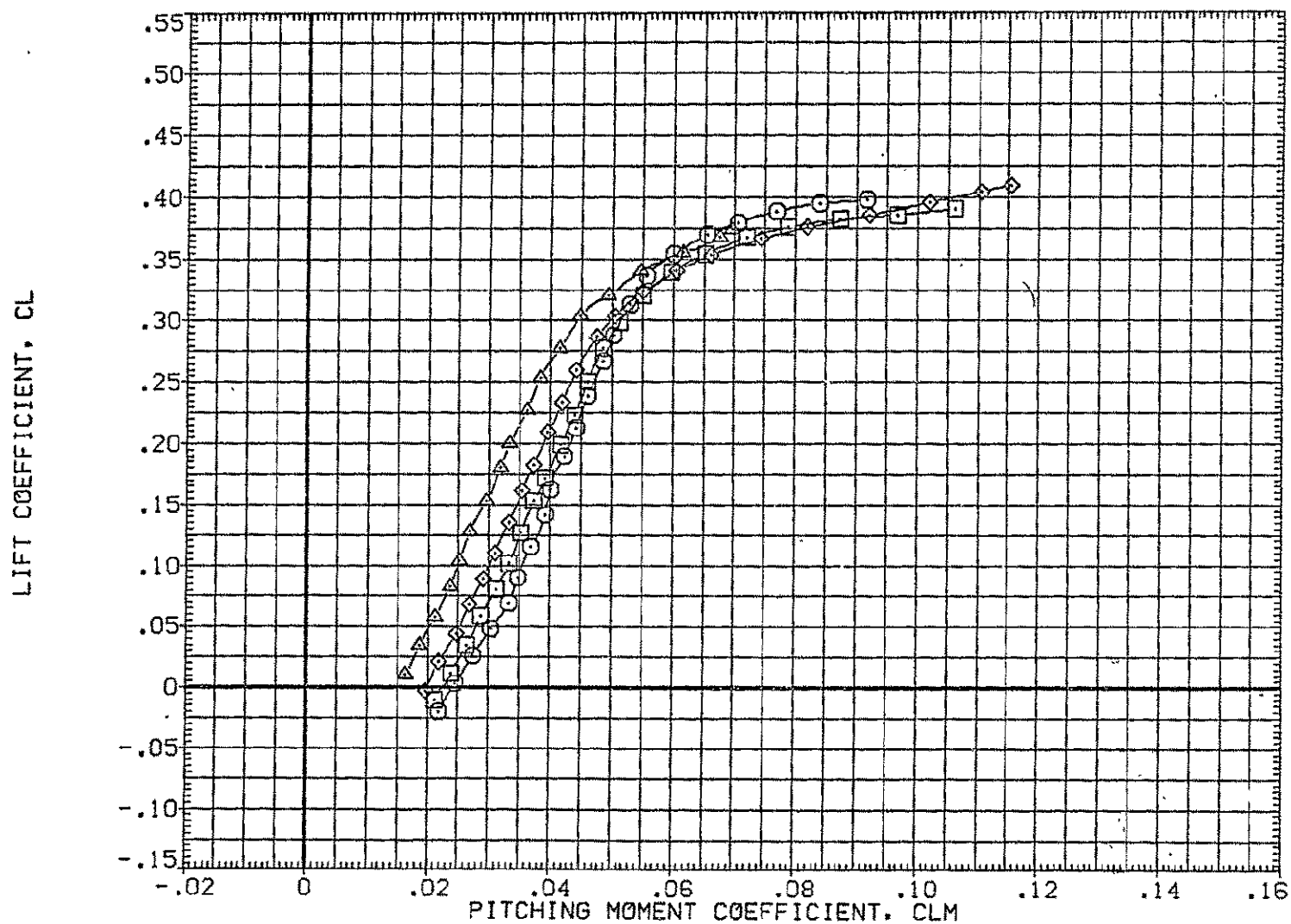


FIG. 94 747+ORB(4 DEG), BASIC TAIL, FLAPS UP FERRY(S=-2)

ORB

SYMBOL	MACH	PARAMETRIC VALUES			
○	.299	BETA	.000	STAB	-2.000
□	.499	RUD-U	.000	RUD-L	.000
◇	.599	ELV-1B	.000	ELV-0B	3.000
△	.699	S1-2	.000	S3-4	.000
		SS-6	.000	10RB	4.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN. X0
YMRP	.0000	IN. Y0
ZMRP	375.0000	IN. Z0
SCALE	.0300	

CARRIER FRL ANGLE OF ATTACK, ALPHA, DEG.

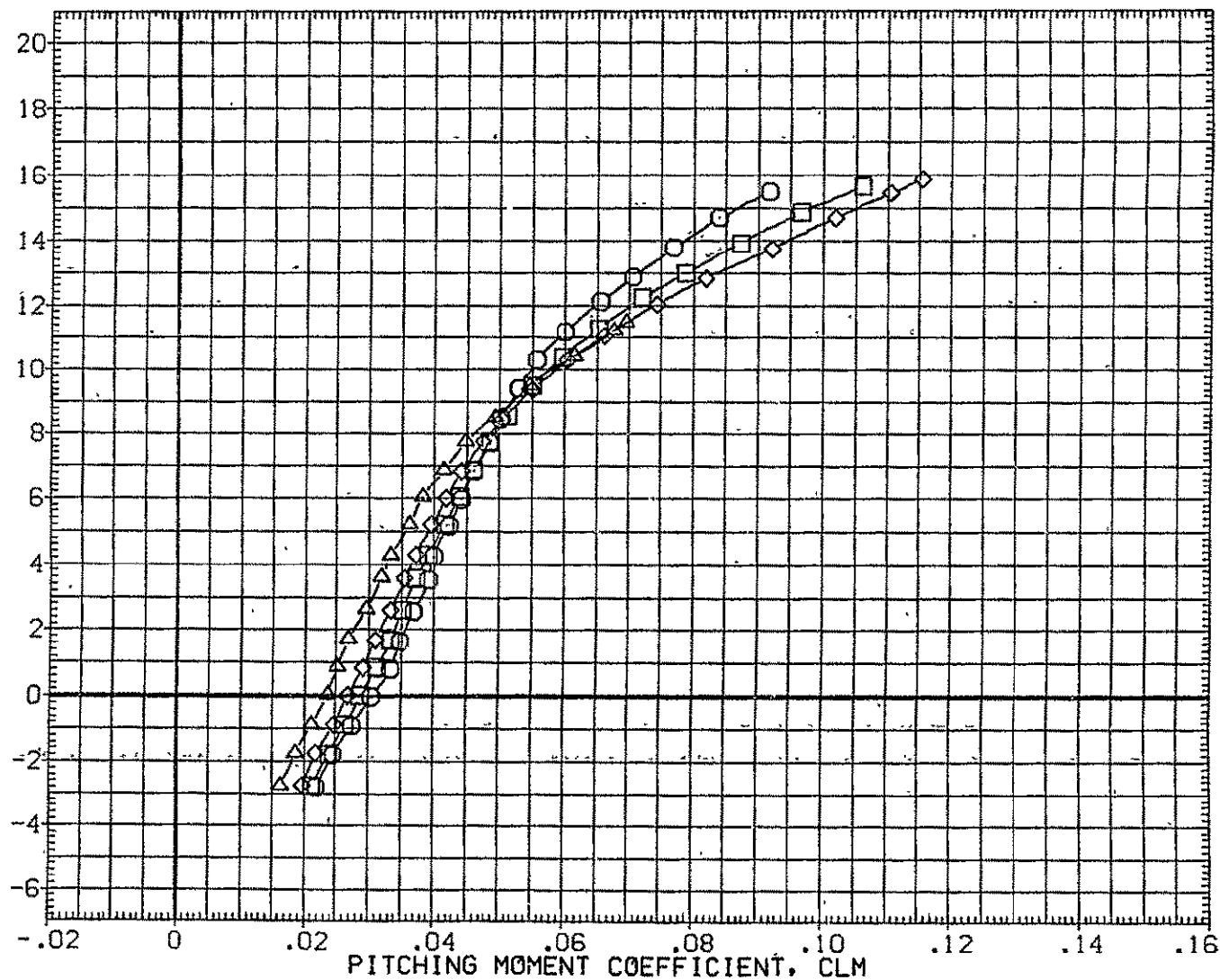


FIG. 94 747+ORB(4 DEG), BASIC TAIL, FLAPS UP FERRY(S=-2)

ORB

CA5 K1 FO H15.6 V9.1 (PLUS. ORB NOZ AT38.3)(RGM126)

SYMBOL
○
□
◇
△

MACH	PARAMETRIC VALUES			
.300	BETA	.000	STAB	-2.000
.500	RUD-U	.000	RUD-L	.000
.600	ELV-1B	.000	ELV-0B	3.000
.700	S1-2	.000	S3-4	.000
	S5-6	.000	10RB	4.000

REFERENCE INFORMATION

SREF	5500.0000	SQ.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

LIFT COEFFICIENT, CL

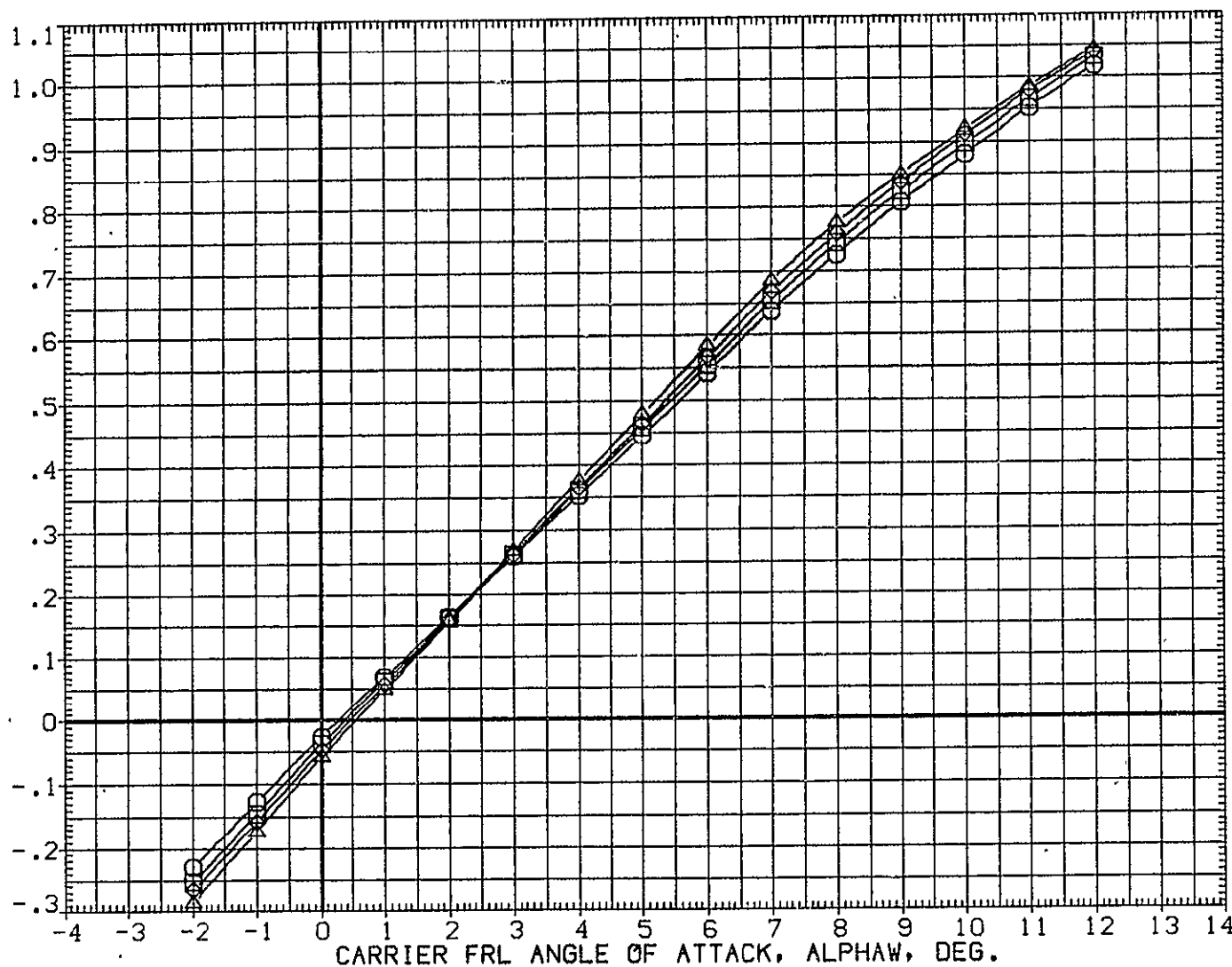


FIG. 95 747+ORB(4 DEG)+TIP FINS, FLAPS UP FERRY, TAIL CONE OFF

TOTAL

SYMBOL	MACH	PARAMETRIC VALUES			
○	.300	BETA	.000	STAB	-2.000
□	.500	RUD-U	.000	RUD-L	.000
◇	.600	ELV-1B	.000	ELV-0B	3.000
△	.700	S1-2	.000	S3-4	.000
		S5-6	.000	10RB	4.000

REFERENCE INFORMATION		
SREF	5500.0000	SQ, FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

LIFT COEFFICIENT, CL

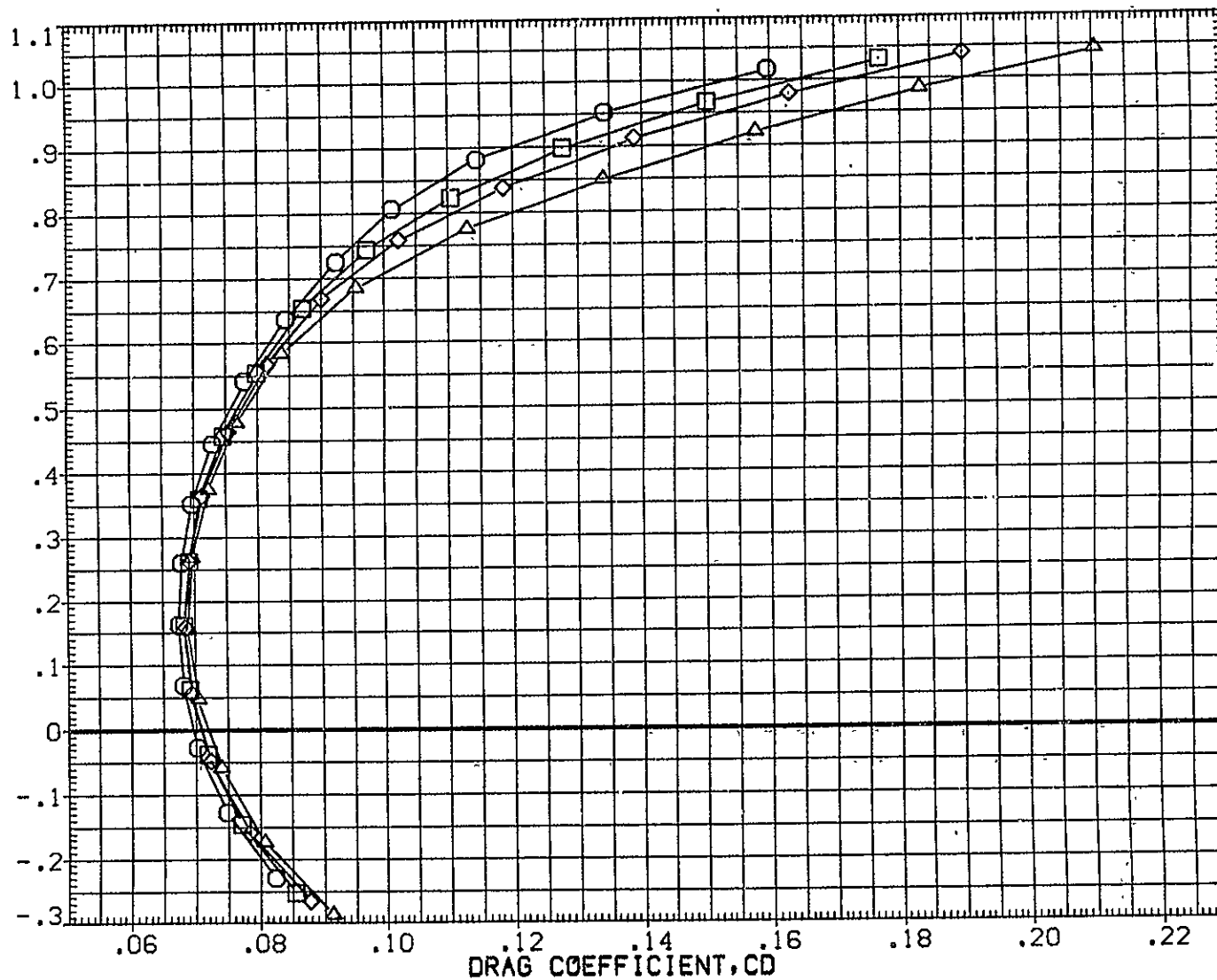


FIG. 95 747+0RB(4 DEG)+TIP FINS, FLAPS UP FERRY, TAIL CONE OFF

CA5 K1 FO H15.6 V9.1 (PLUS. 0RB N0Z AT38.3)(RGM126)

SYMBOL	MACH	PARAMETRIC VALUES				REFERENCE INFORMATION		
○	.300	BETA	.000	STAB	-2.000	SREF	5500.0000	SQ.FT.
□	.500	RUD-U	.000	RUD-L	.000	LREF	327.8000	IN.
◇	.600	ELV-1B	.000	ELV-0B	3.000	BREF	2348.0000	IN.
△	.700	S1-2	.000	S3-4	.000	XMRP	1339.9100	IN. XC
		S5-6	.000	10RB	4.000	YMRP	.0000	IN. YC
						ZMRP	190.7500	IN. ZC
						SCALE	.0300	

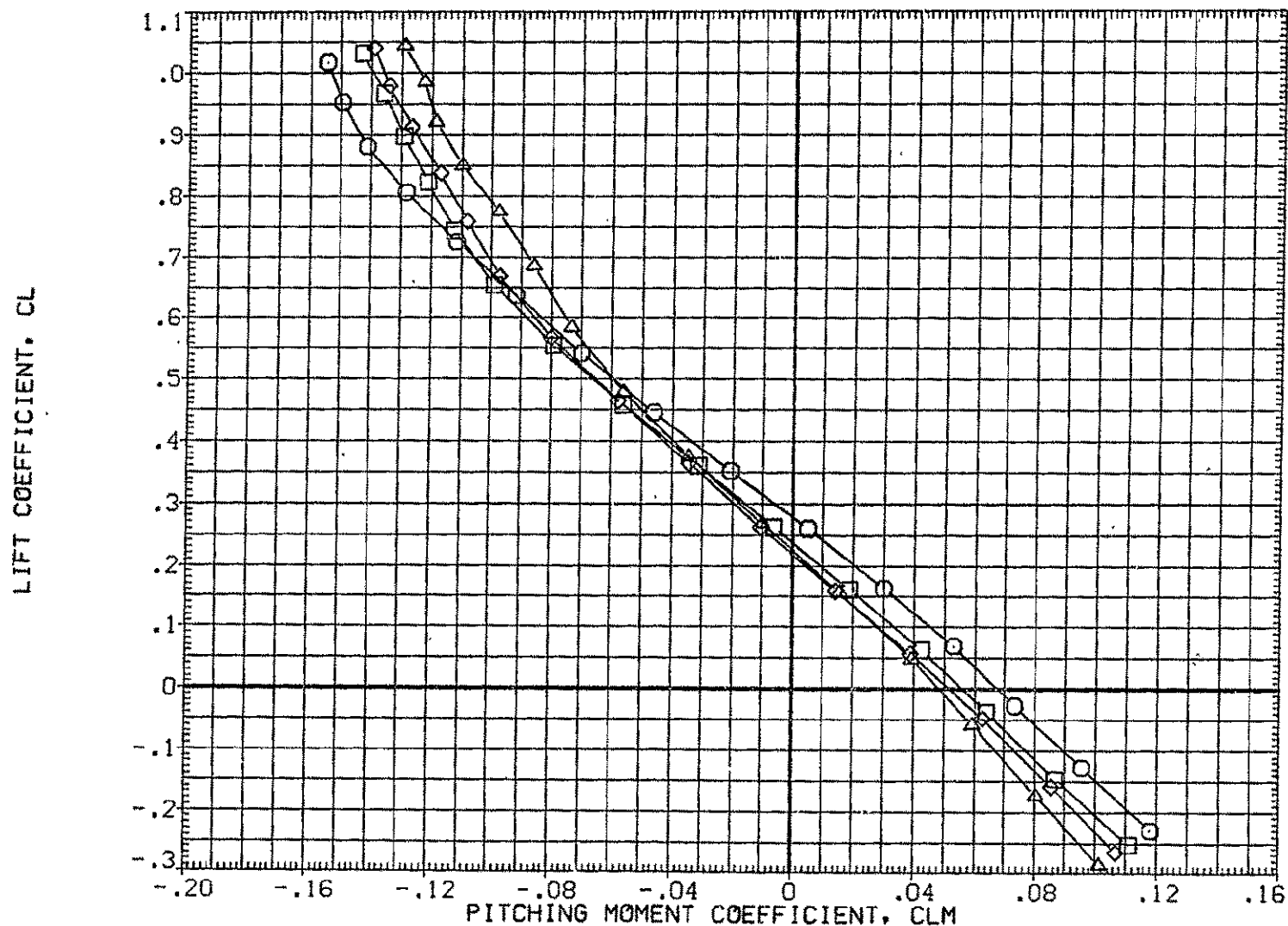


FIG. 95 747+0RB(4 DEG)+TIP FINS, FLAPS UP FERRY, TAIL CONE OFF

TOTAL

SYMBOL	MACH	PARAMETRIC VALUES				REFERENCE INFORMATION		
○	.300	BETA	.000	STAB	-2.000	SREF	5500.0000	SQ.FT.
□	.500	RUD-U	.000	RUD-L	.000	LREF	327.8000	IN.
◇	.600	ELV-1B	.000	ELV-0B	3.000	BREF	2348.0000	IN.
△	.700	S1-2	.000	S3-4	.000	XMRP	1339.9100	IN.
		S5-6	.000	10RB	4.000	YMRP	.0000	IN.
						ZMRP	190.7500	IN.
						SCALE	.0300	

CARRIER FRL ANGLE OF ATTACK, ALPHAW, DEG.

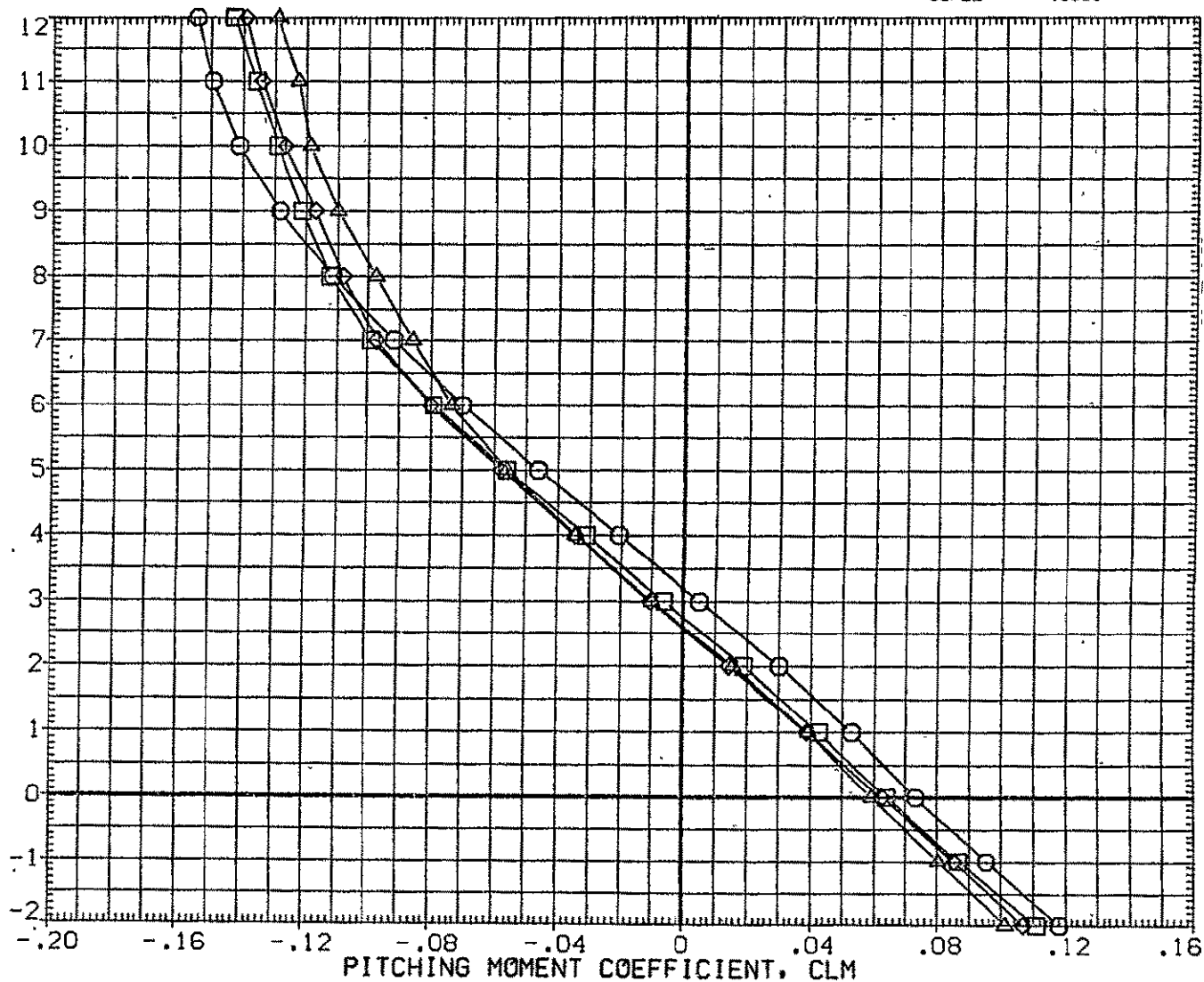


FIG. 95 747+0RB(4 DEG)+TIP FINS, FLAPS UP FERRY, TAIL CONE OFF

TOTAL

CA5 K1 FO H15.6 V9.1 MINUS ORB NOZ AT38.3 (BGM126)

SYMBOL
○
□
◇
△

MACH
.300
.500
.600
.700

BETA
RUD-U
ELV-1B
S1-2
SS-6

PARAMETRIC VALUES
.000
.000
.000
.000
.000
STAB
RUD-L
ELV-OB
S3-4
IORB

-2.000
.000
3.000
.000
4.000

REFERENCE INFORMATION

SREF	5500.0000	SQ.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

INCREMENTAL LIFT FORCE COEFFICIENT(STABILITY AXIS), DCL

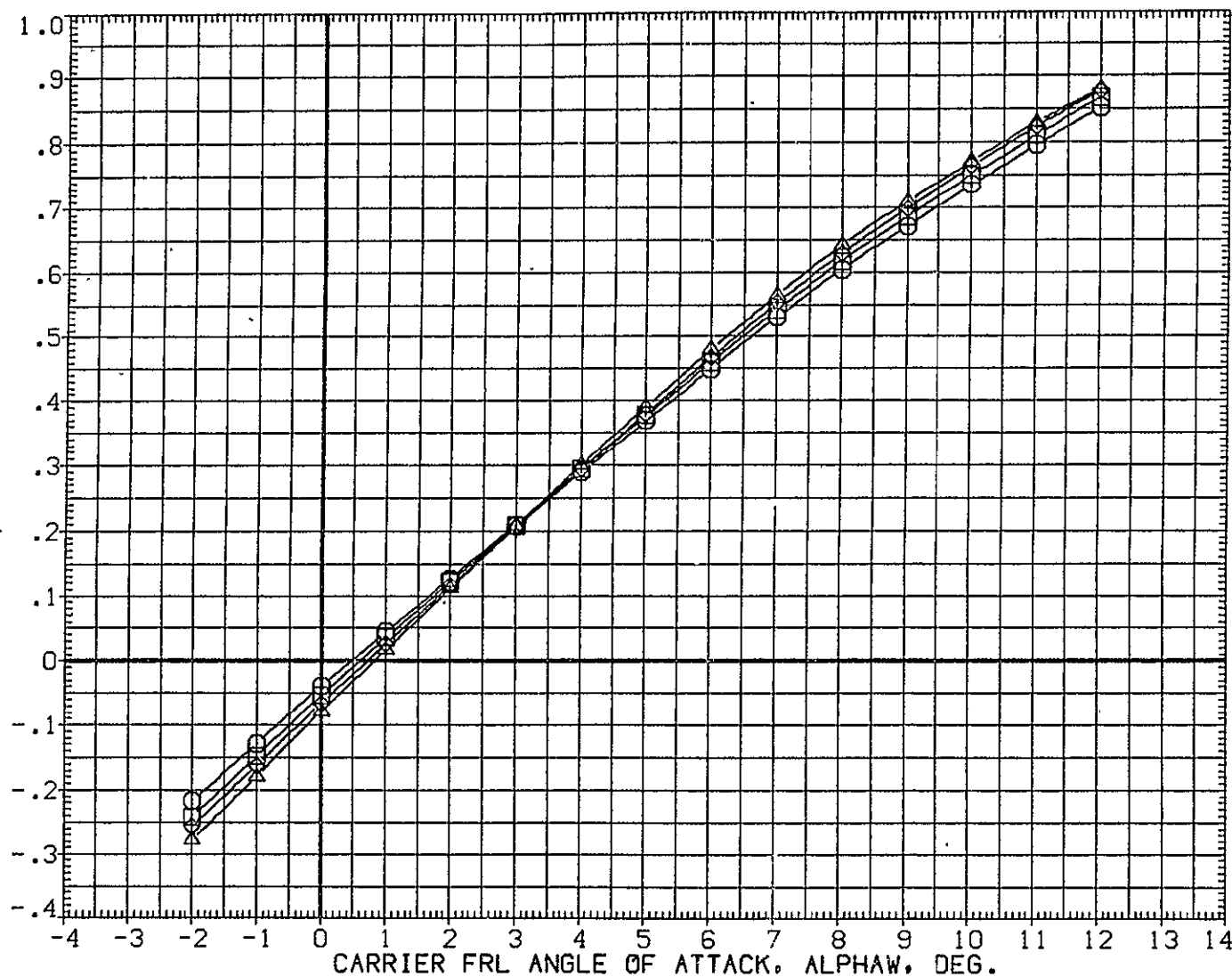


FIG. 96 747+ORB(4 DEG)+TIP FINS, FLAPS UP FERRY, TAIL CONE OFF

747

SYMBOL	MACH	PARAMETRIC VALUES				REFERENCE INFORMATION		
○	.300	BETA	.000	STAB	-2.000	SREF	5500.0000	SQ.FT.
□	.500	RUD-U	.000	RUD-L	.000	LREF	327.8000	IN.
◇	.600	ELV-1B	.000	ELV-0B	3.000	BREF	2348.0000	IN.
△	.700	S1-2	.000	S3-4	.000	XMRP	1339.9100	IN. XC
		S5-6	.000	10RB	4.000	YMRP	.0000	IN. YC
						ZMRP	190.7500	IN. ZC
						SCALE	.0300	

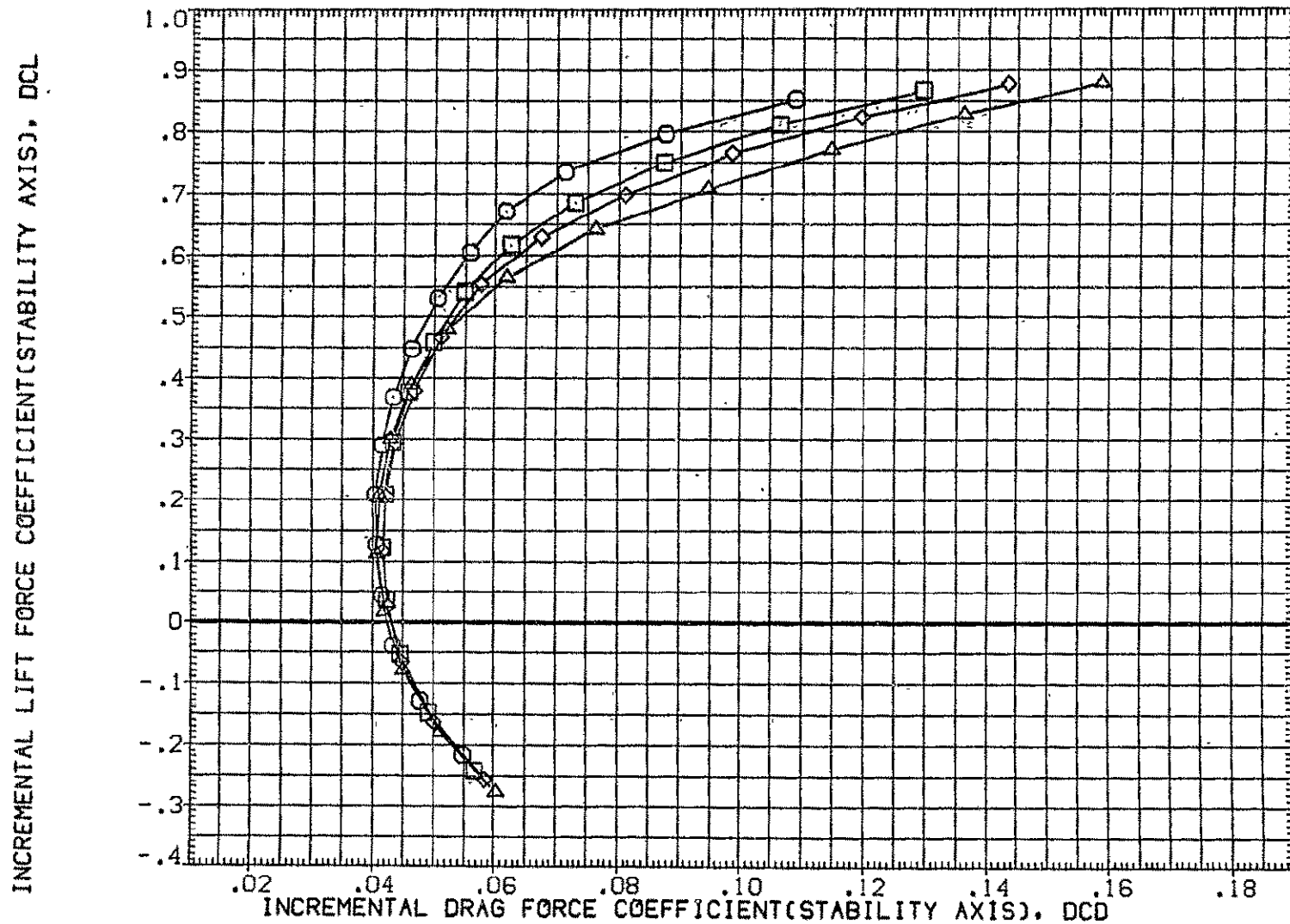


FIG. 96 747+0RB(4 DEG)+TIP FINS, FLAPS UP FERRY, TAIL CONE OFF

747

CA5 K1 FO H15.6 V9.1 MINUS ORB NOZ AT38.3 (BGM126)

SYMBOL	MACH	PARAMETRIC VALUES				REFERENCE INFORMATION		
○	.300	BETA	.000	STAB	-2.000	SREF	5500.0000	SQ.FT.
□	.500	RUD-U	.000	RUD-L	.000	LREF	327.8000	IN.
◇	.600	ELV-1B	.000	ELV-0B	3.000	BREF	2348.0000	IN.
△	.700	S1-2	.000	S3-4	.000	XMRP	1339.9100	IN. XC
		S5-6	.000	10RB	4.000	YMRP	.0000	IN. YC
						ZMRP	190.7500	IN. ZC
						SCALE	.0300	

INCREMENTAL LIFT FORCE COEFFICIENT(STABILITY AXIS), DCL

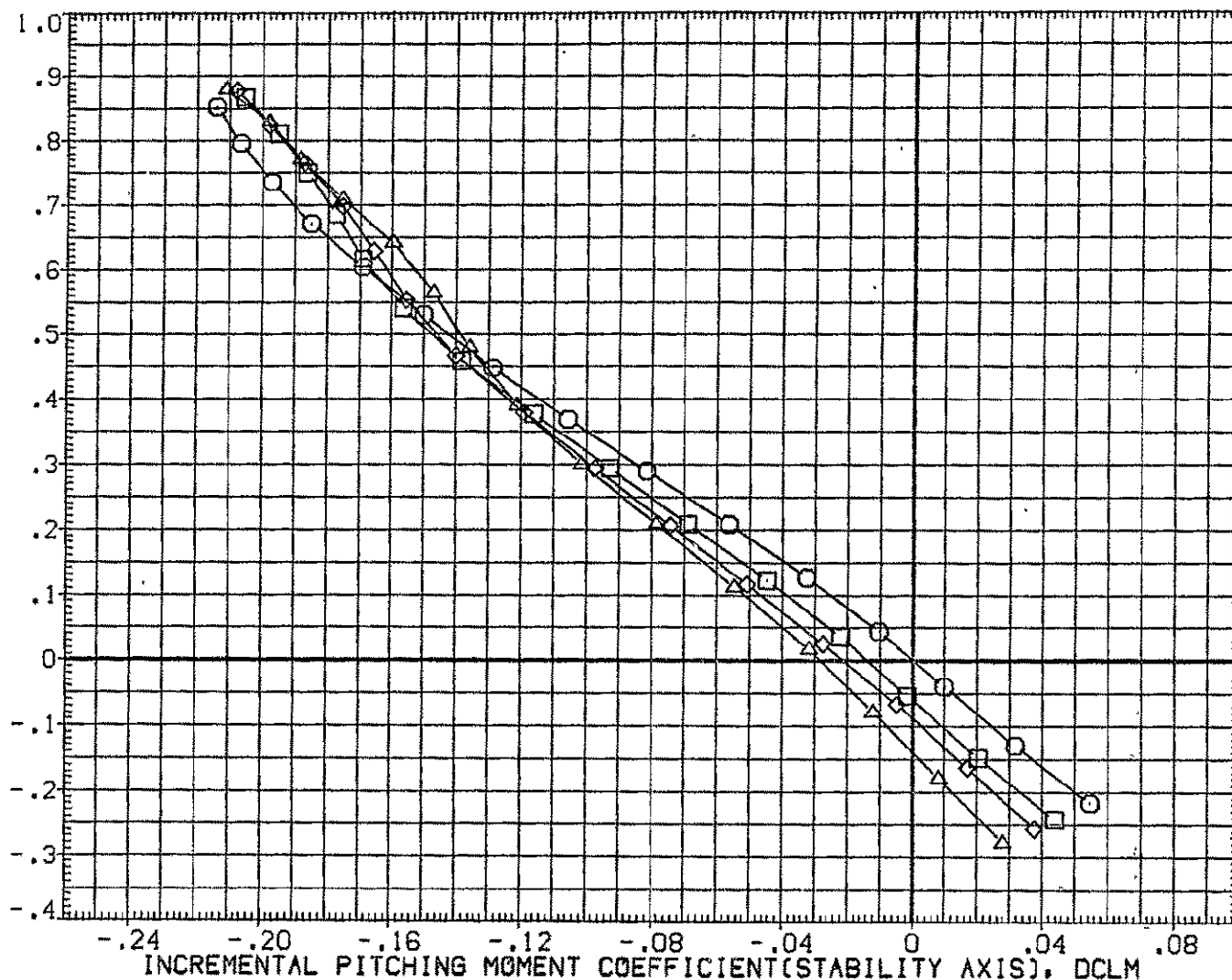


FIG. 96 747+ORB(4 DEG)+TIP FINS, FLAPS UP FERRY, TAIL CONE OFF

747

SYMBOL	MACH	PARAMETRIC VALUES
○	.300	BETA .000 STAB -2.000
□	.500	RUD-U .000 RUD-L .000
◇	.600	ELV-IB .000 ELV-OB 3.000
△	.700	S1-2 .000 S3-4 .000
		SS-6 .000 IORB 4.000

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

CARRIER FRL ANGLE OF ATTACK, ALPHAW, DEG.

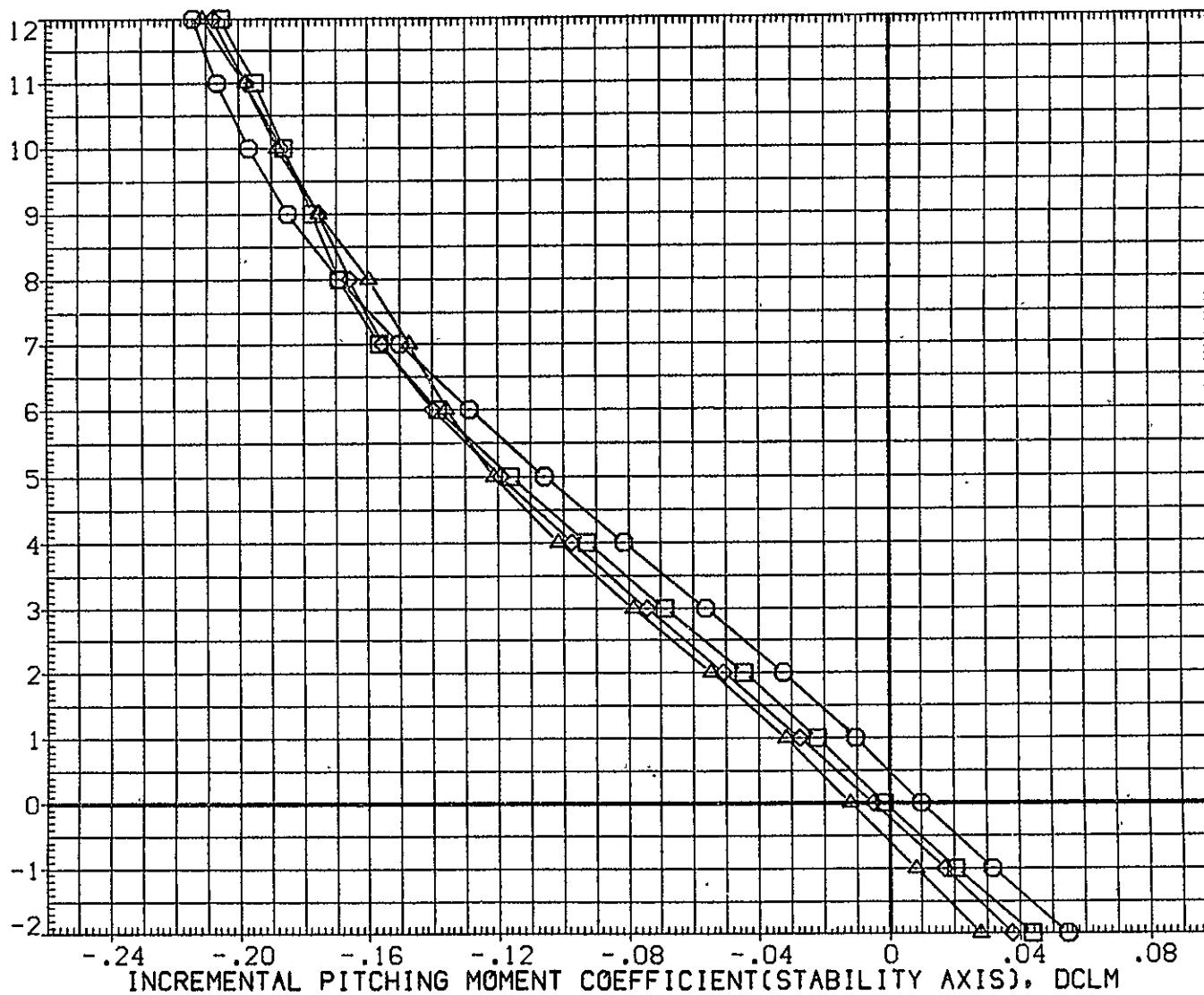


FIG. 96 747+ORB(4 DEG)+TIP FINS, FLAPS UP FERRY, TAIL CONE OFF

747

CAS ORB NOZ AT38.3 (PRES. K1 FO H15.6 V9.1)(YGM126)

SYMBOL	MACH	PARAMETRIC VALUES				REFERENCE INFORMATION		
○	.299	BETA	.000	STAB	-2.000	SREF	2690.0000	SQ. FT.
□	.500	RUD-U	.000	RUD-L	.000	LREF	474.8100	IN.
◇	.600	ELV-IB	.000	ELV-OB	3.000	BREF	936.6800	IN.
△	.699	S1-2	.000	S3-4	.000	XMRP	1109.0000	IN. X0
		S5-6	.000	IORB	4.000	YMRP	.0000	IN. Y0
						ZMRP	375.0000	IN. Z0
						SCALE	.0300	

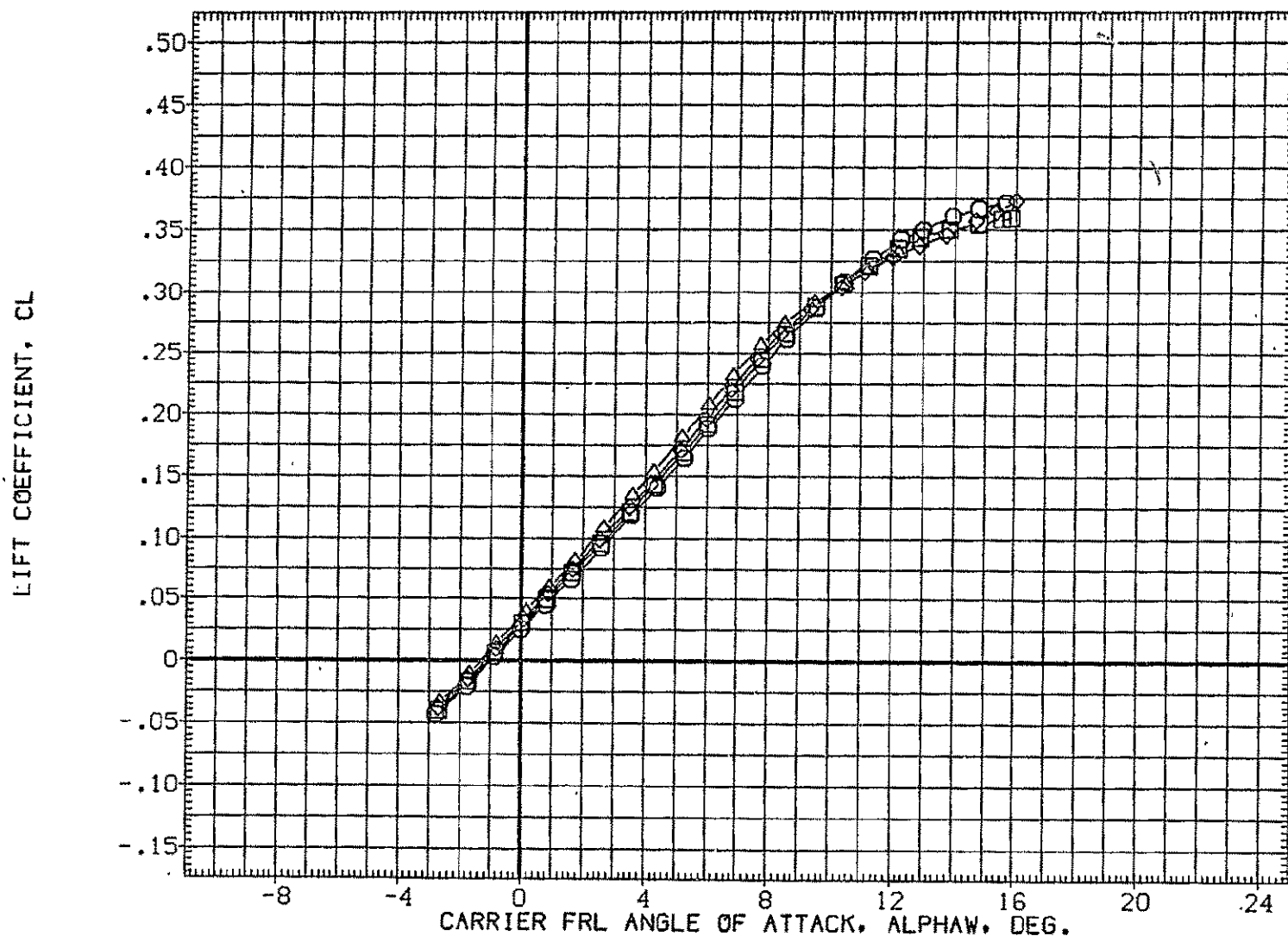


FIG. 97 747+ORB(4 DEG)+TIP FINS, FLAPS UP FERRY, TAIL CONE OFF

ORB

SYMBOL	MACH	PARAMETRIC VALUES			
○	.299	BETA	.000	STAB	-2.000
□	.500	RUD-U	.000	RUD-L	.000
◇	.600	ELV-1B	.000	ELV-OB	3.000
△	.699	S1-2	.000	S3-4	.000
		S5-6	.000	IORB	4.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN. X0
YMRP	.0000	IN. Y0
ZMRP	375.0000	IN. Z0
SCALE	.0300	

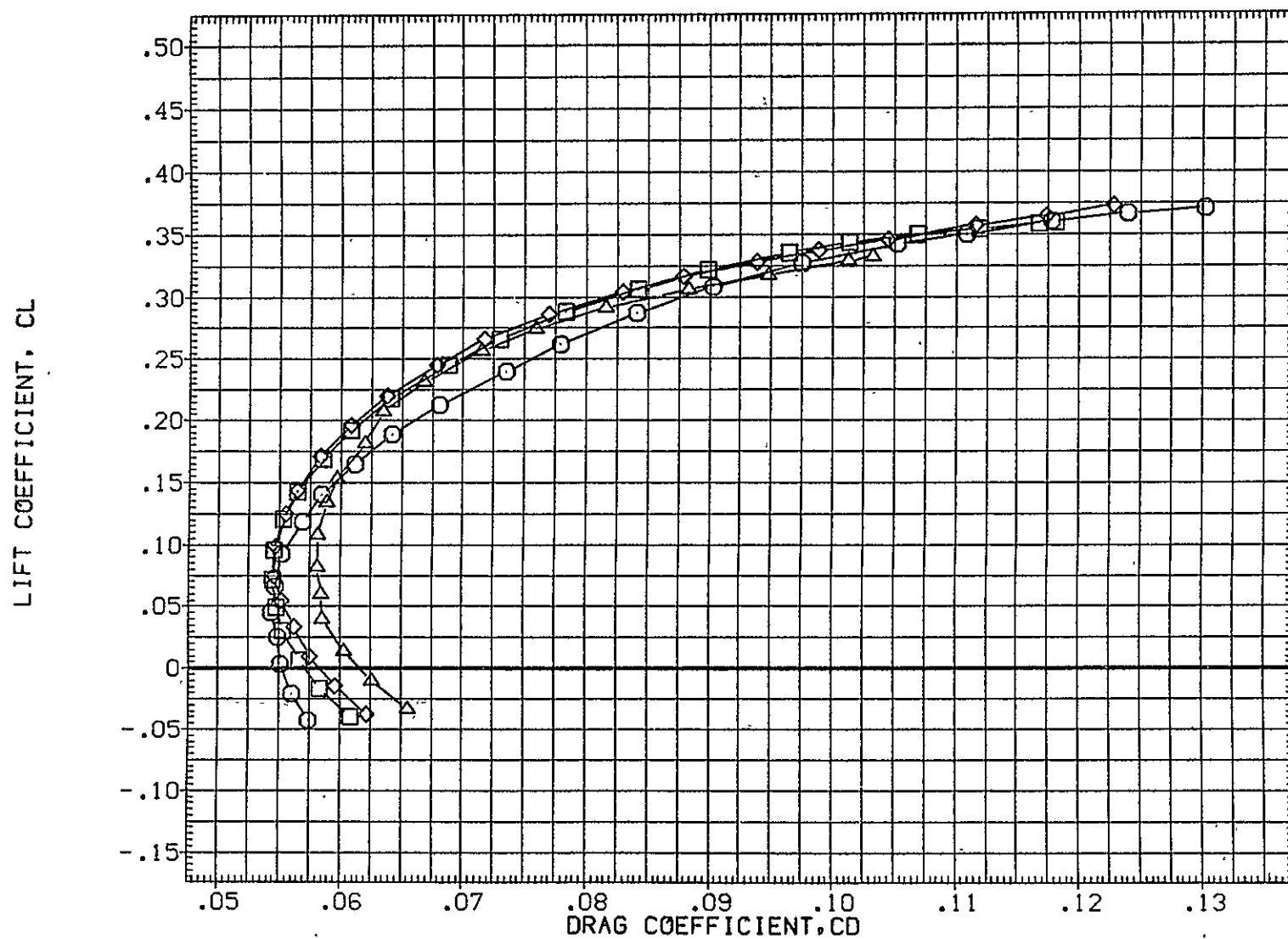


FIG. 97 747+ORB(4 DEG)+TIP FINS, FLAPS UP FERRY, TAIL CONE OFF

ORB

CA5 ORB NOZ AT38.3 (PRES. K1 FO H15.6 V9.1)(YGM126)

SYMBOL	MACH	PARAMETRIC VALUES				REFERENCE INFORMATION	
○	.299	BETA	.000	STAB	-2.000	SREF	2690.0000 SQ.FT.
□	.500	RUD-U	.000	RUD-L	.000	LREF	474.8100 IN.
◇	.600	ELV-1B	.000	ELV-OB	3.000	BREF	936.6800 IN.
△	.699	S1-2	.000	S3-4	.000	XMRP	1109.0000 IN. X0
		S5-6	.000	10RB	4.000	YMRP	.0000 IN. Y0
						ZMRP	375.0000 IN. Z0
						SCALE	.0300

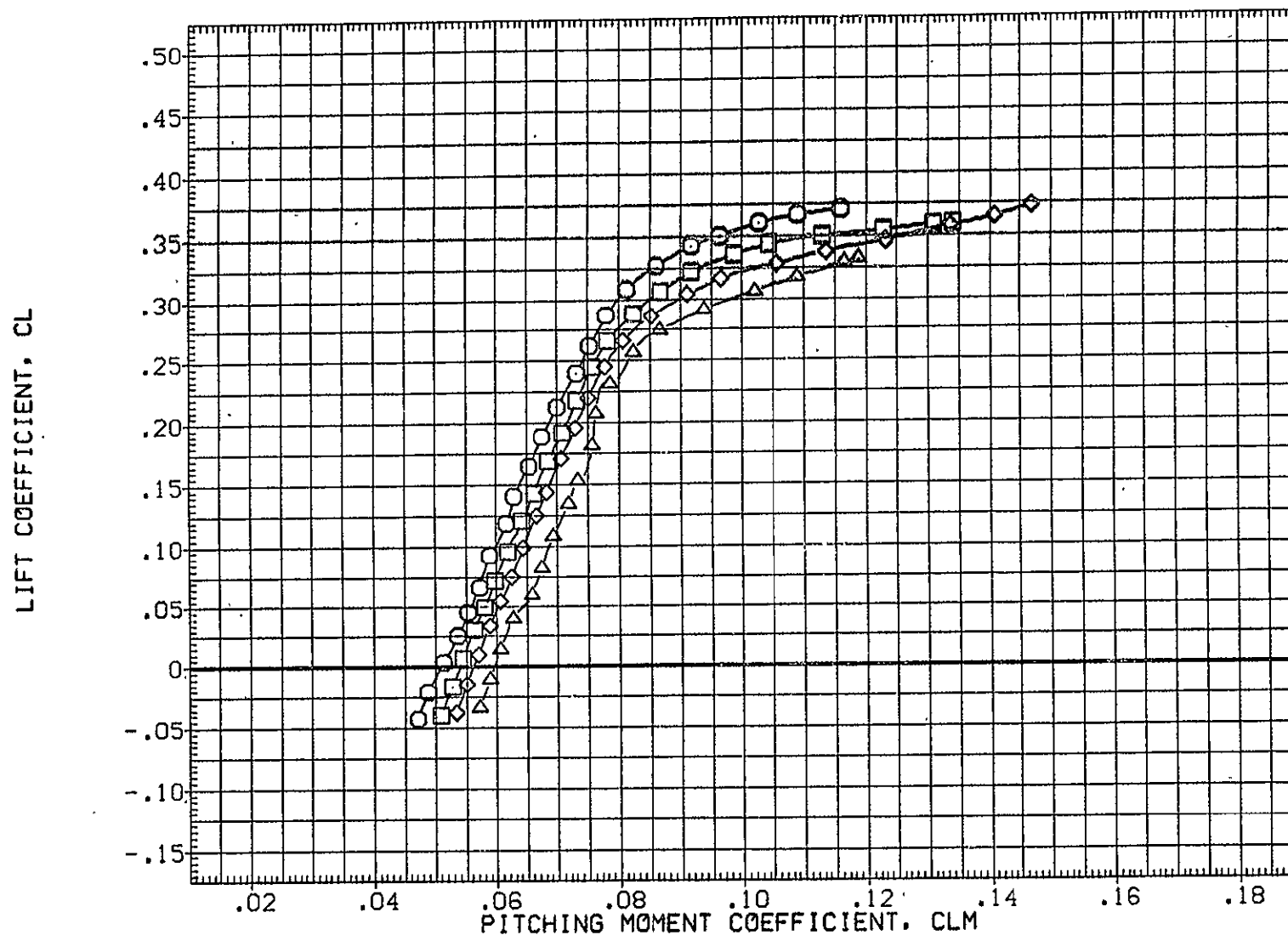


FIG. 97 747+ORB(4 DEG)+TIP FINS, FLAPS UP FERRY, TAIL CONE OFF

ORB

SYMBOL	MACH	PARAMETRIC VALUES			
○	.299	BETA	.000	STAB	-2.000
□	.500	RUD-U	.000	RUD-L	.000
◇	.600	ELV-1B	.000	ELV-2B	3.000
△	.699	S1-2	.000	S3-4	.000
		S5-6	.000	ICRB	4.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN. X0
YMRP	.0000	IN. Y0
ZMRP	375.0000	IN. Z0
SCALE	.0300	

CARRIER FRL ANGLE OF ATTACK, ALPHA, DEG.

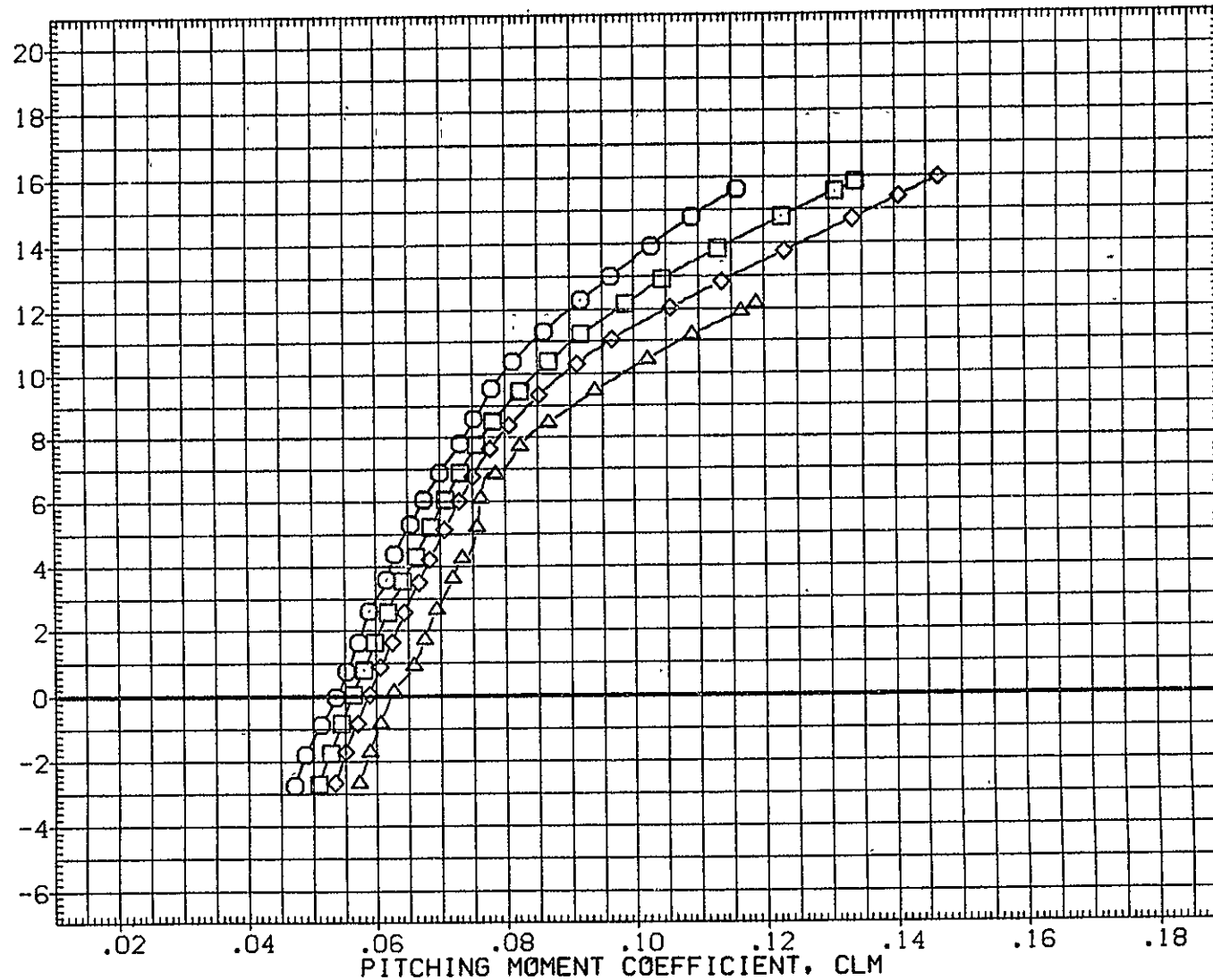


FIG. 97 747+ORB(4 DEG)+TIP FINS, FLAPS UP FERRY, TAIL CONE OFF

ORB

CAS ORB N28 N24

(AGM128)

SYMBOL	MACH	BETA	PARAMETRIC VALUES
○	.300		.000
□	.499		
◇	.600		
△	.700		

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN. X0
YMRP	.0000	IN. Y0
ZMRP	375.0000	IN. Z0
SCALE	.0300	

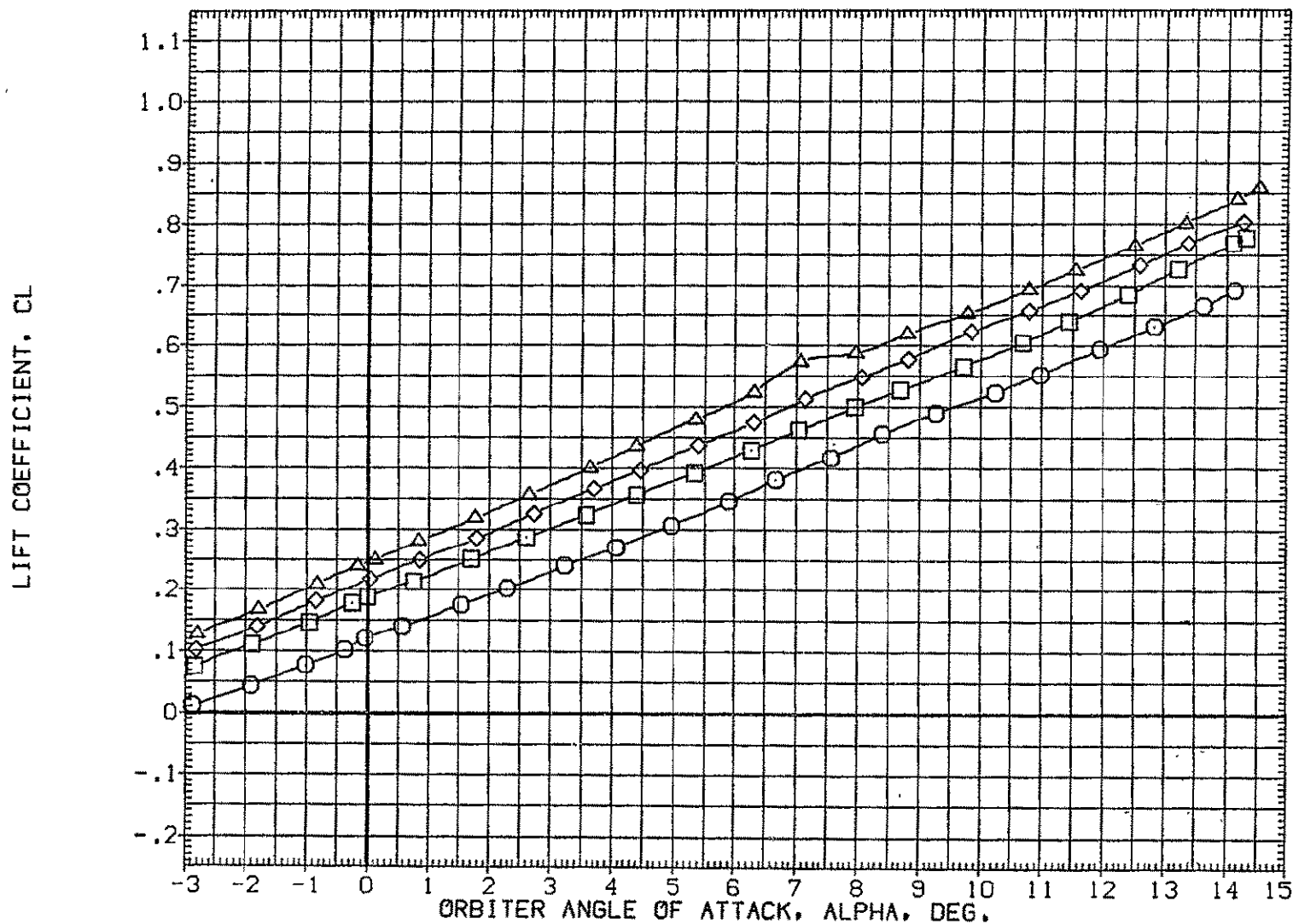


FIG. 98 ORBITER ALONE, TAIL CONE OFF

SYMBOL	MACH	BETA	PARAMETRIC VALUES
○	.300		.000
□	.499		
◇	.600		
△	.700		

REFERENCE INFORMATION		
SREF	2690.0000	SO.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN. X0
YMRP	.0000	IN. Y0
ZMRP	375.0000	IN. Z0
SCALE	.0300	

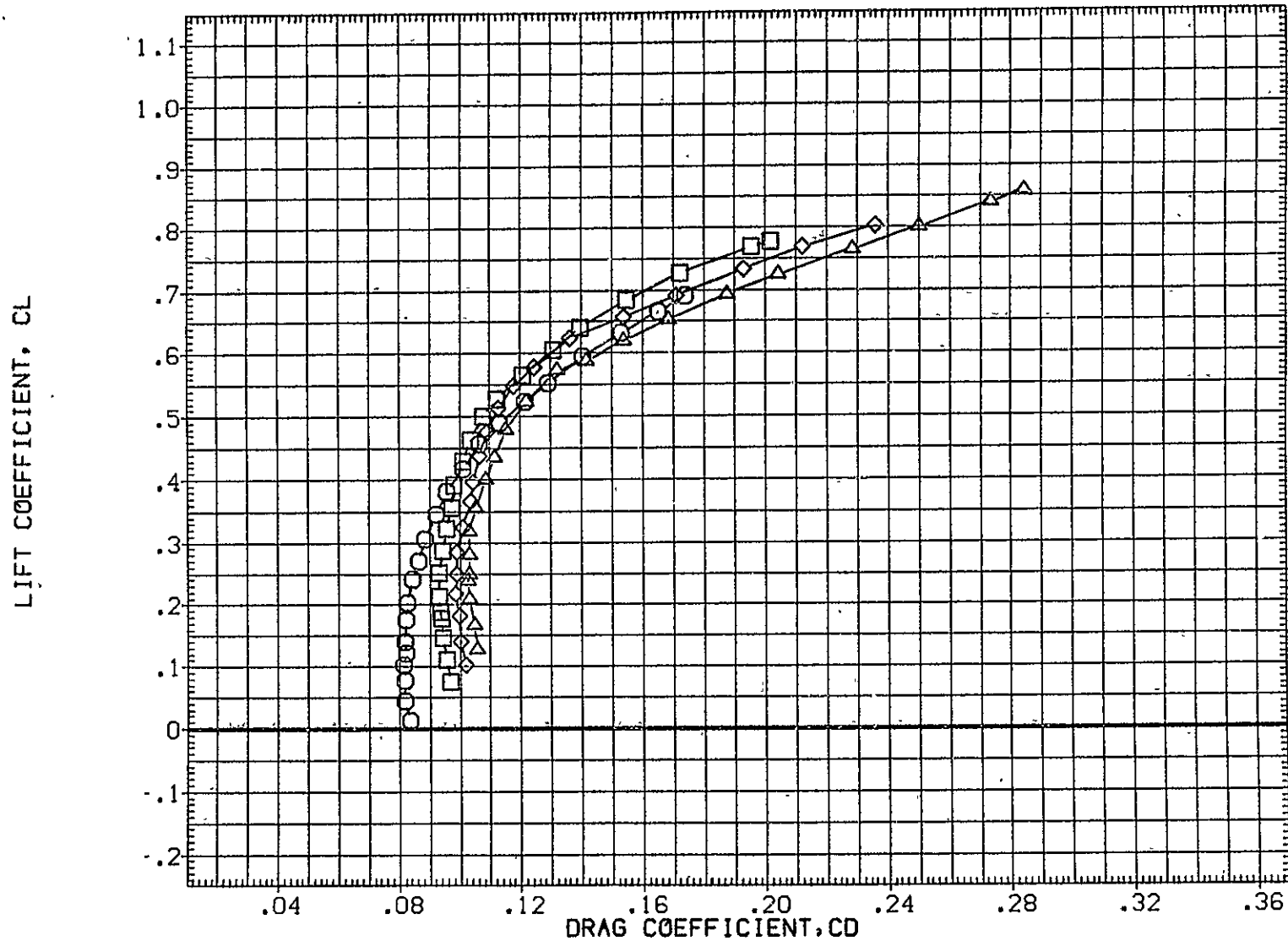


FIG. 98 ORBITER ALONE, TAIL CONE OFF

CA5 ORB N28 N24

(AGM128)

SYMBOL	MACH	BETA	PARAMETRIC VALUES
○	.300		.000
□	.499		
◇	.600		
△	.700		

REFERENCE INFORMATION

SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN. X0
YMRP	.0000	IN. Y0
ZMRP	375.0000	IN. Z0
SCALE	.0300	

LIFT COEFFICIENT, CL

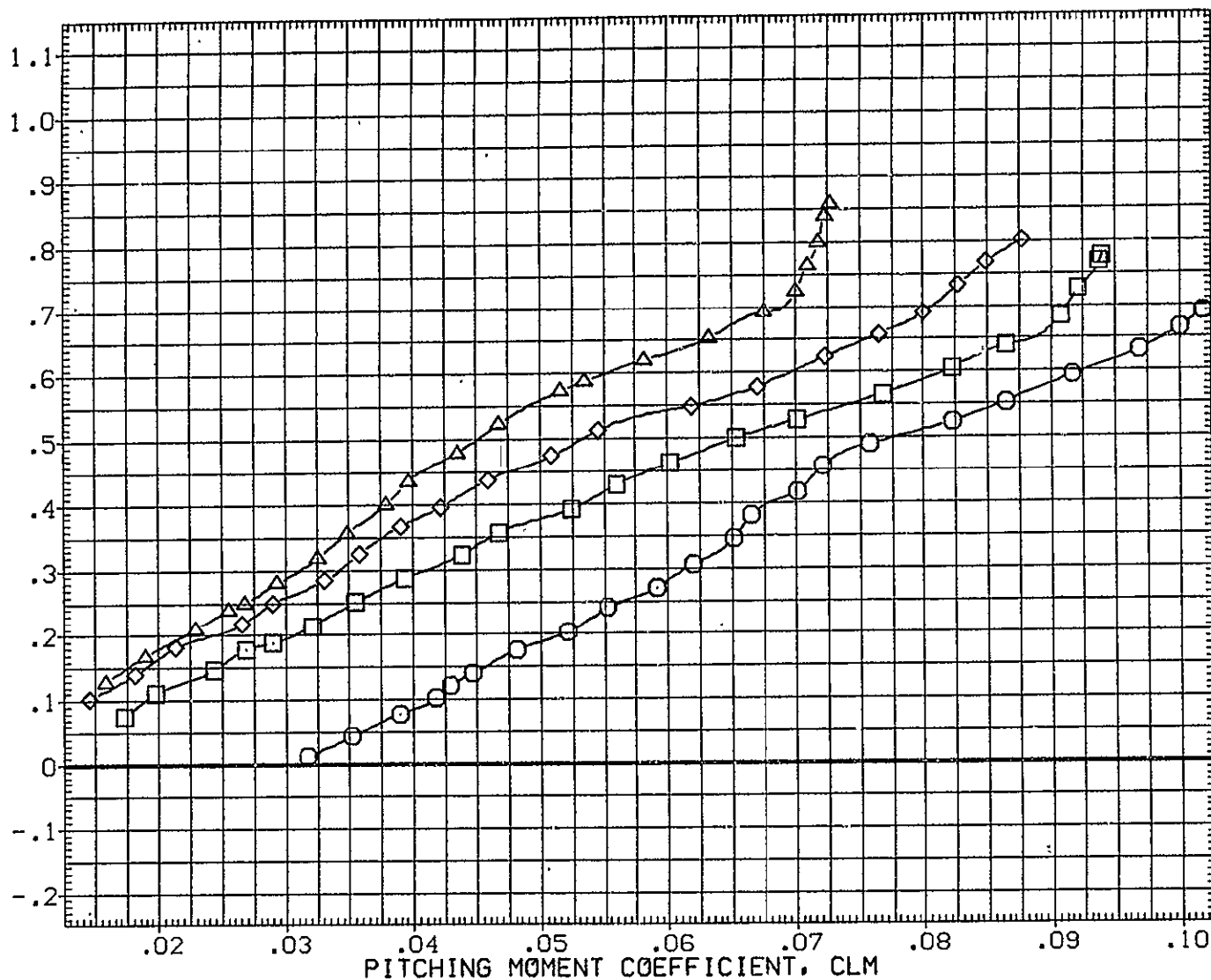


FIG. 98 ORBITER ALONE, TAIL CONE OFF

SYMBOL	MACH	BETA	PARAMETRIC VALUES
○	.300		.000
□	.499		
◇	.600		
△	.700		

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN. X0
YMRP	.0000	IN. Y0
ZMRP	375.0000	IN. Z0
SCALE	.0300	

ORBITER ANGLE OF ATTACK, ALPHA, DEG.

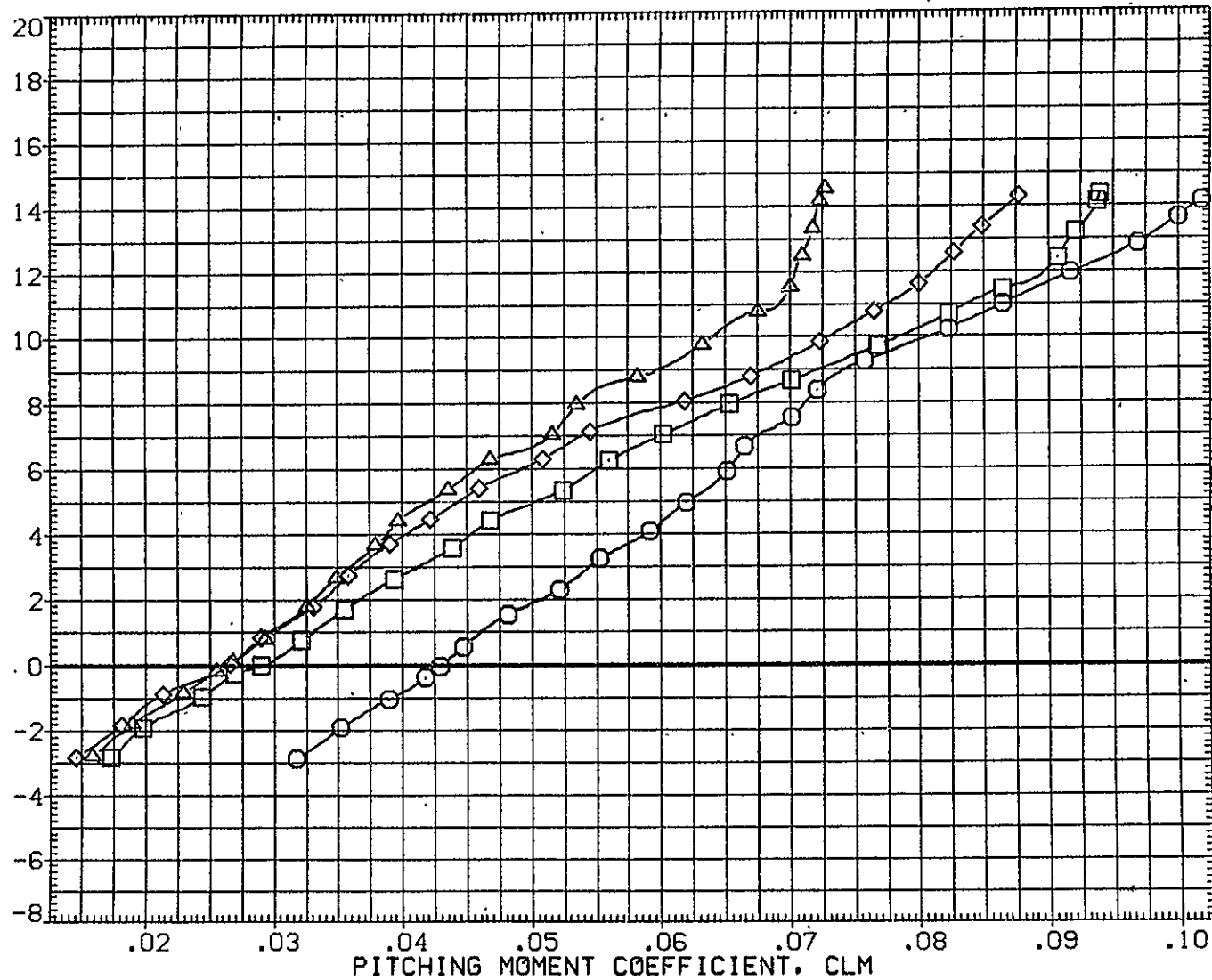


FIG. 98 ORBITER ALONE, TAIL CONE OFF

CA5 ORB N28 N24

(AGM129)

SYMBOL	MACH	BETA	PARAMETRIC VALUES
○	.500		.000
□	.600		

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN. X0
YMRP	.0000	IN. Y0
ZMRP	375.0000	IN. Z0
SCALE	.0300	

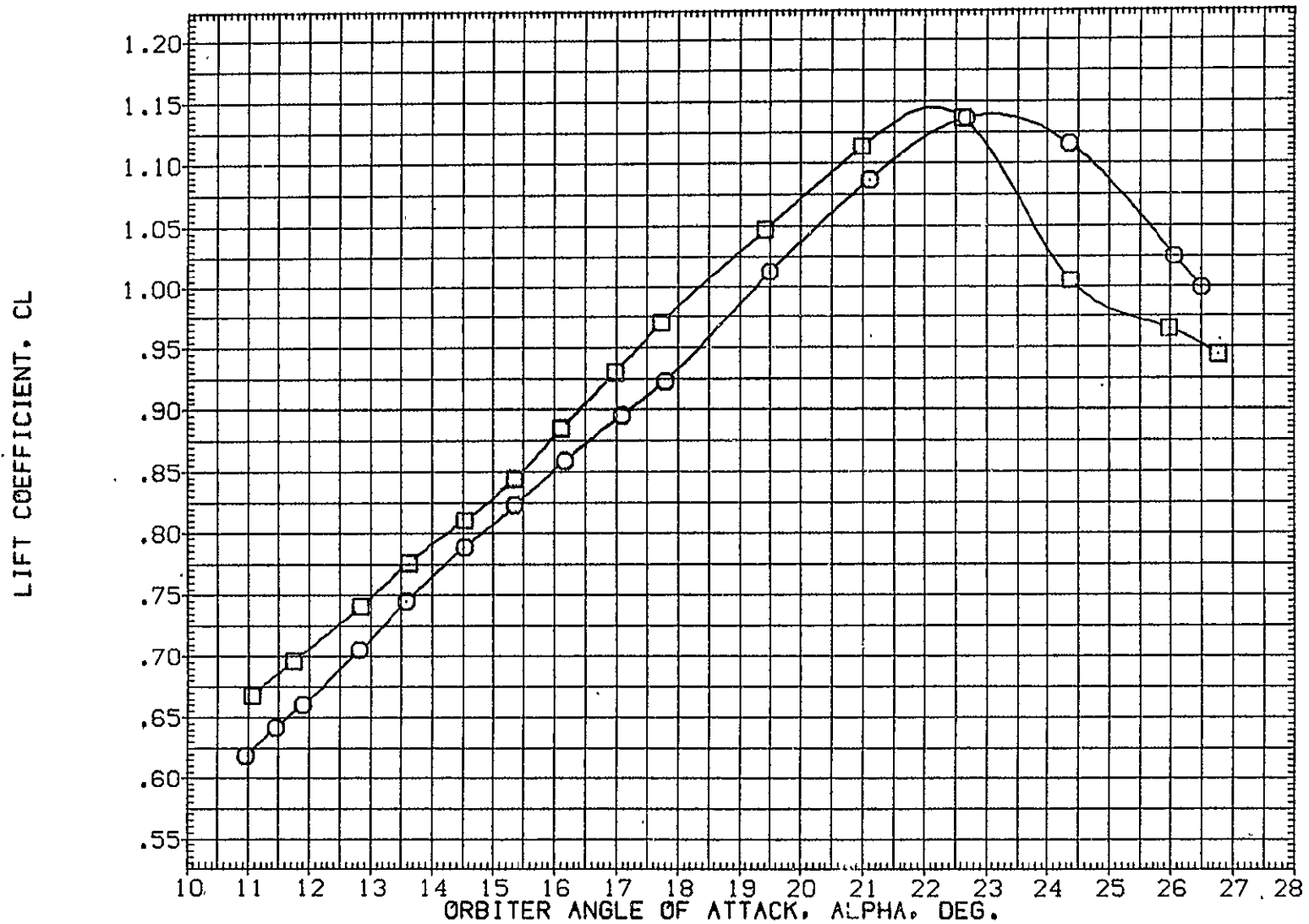


FIG. 98 ORBITER ALONE, TAIL CONE OFF

SYMBOL MACH BETA PARAMETRIC VALUES
 ○ .500
 □ .600

REFERENCE INFORMATION

SREF	2690.0000	SQ:FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN. X0
YMRP	.0000	IN. Y0
ZMRP	375.0000	IN. Z0
SCALE	.0300	

LIFT COEFFICIENT, CL

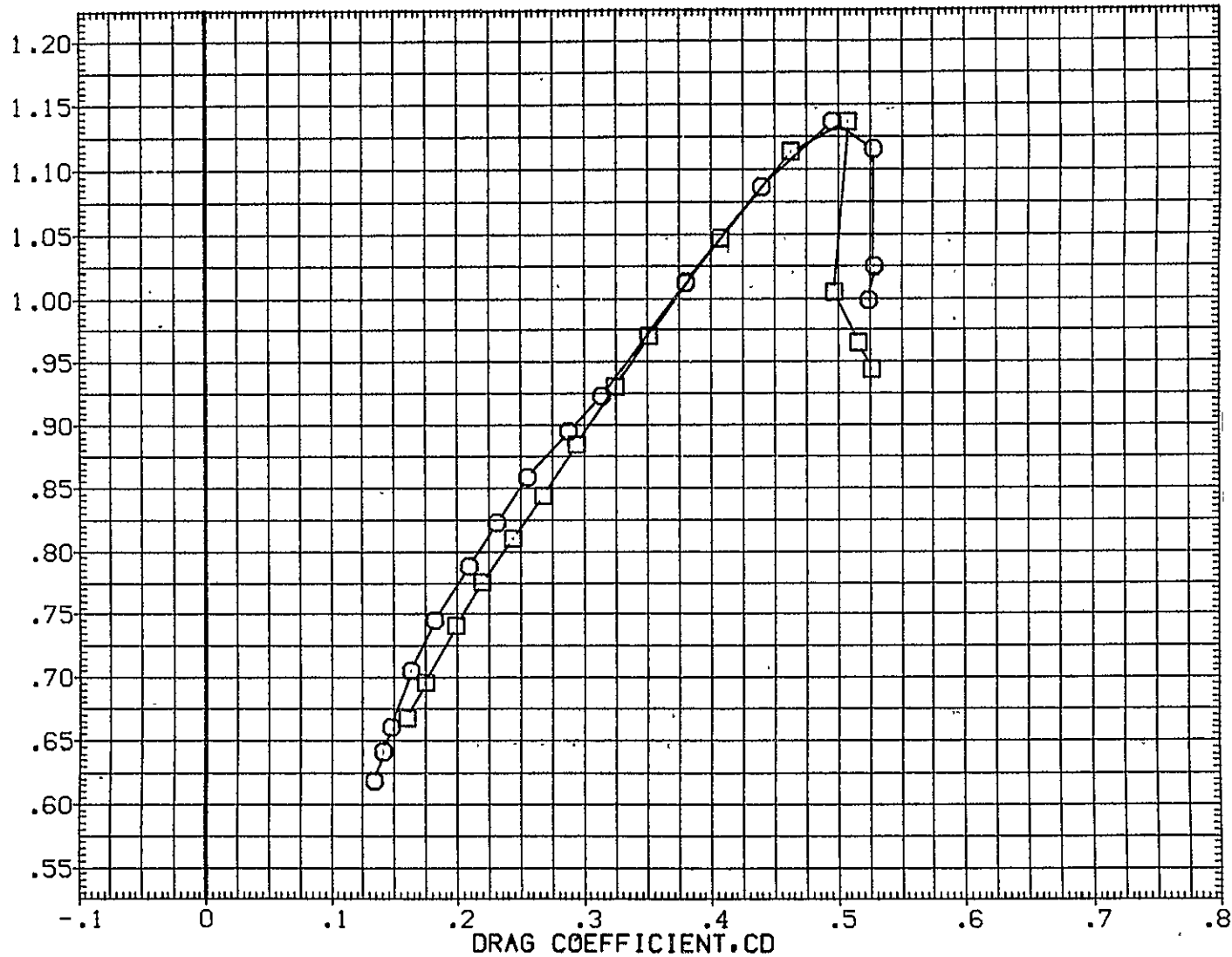


FIG. 98 ORBITER ALONE, TAIL CONE OFF

CA5 ORB N28 N24

(AGM129)

SYMBOL	MACH	BETA	PARAMETRIC VALUES
○	.500		.000
□	.600		

REFERENCE INFORMATION

SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN. X0
YMRP	.0000	IN. Y0
ZMRP	375.0000	IN. Z0
SCALE	.0300	

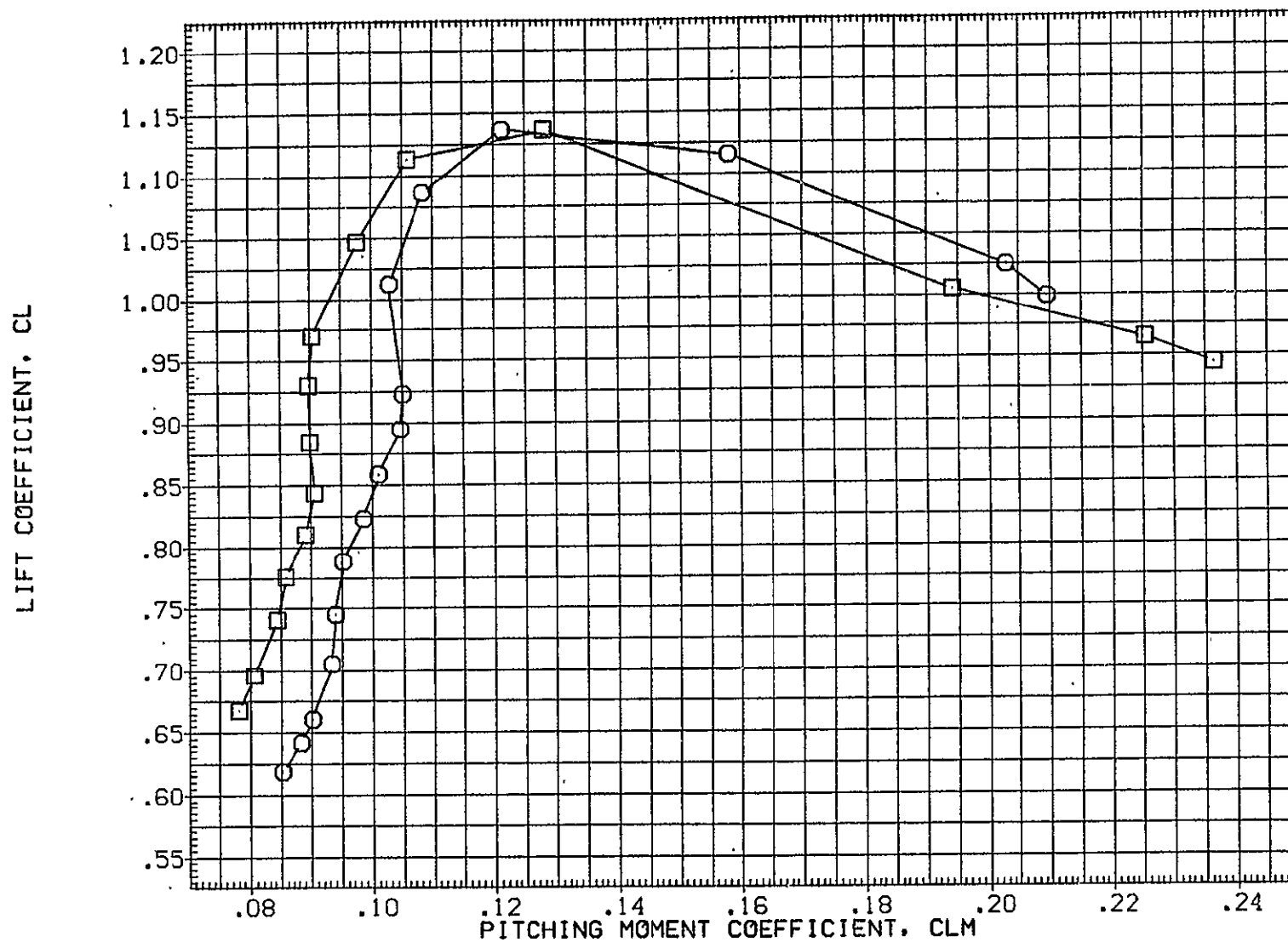


FIG. 98 ORBITER ALONE, TAIL CONE OFF

SYMBOL	MACH	BETA	PARAMETRIC VALUES
○	.500		.000
□	.600		

REFERENCE INFORMATION

SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN. X0
YMRP	.0000	IN. Y0
ZMRP	375.0000	IN. Z0
SCALE	.0300	

ORBITER ANGLE OF ATTACK, ALPHA, DEG.

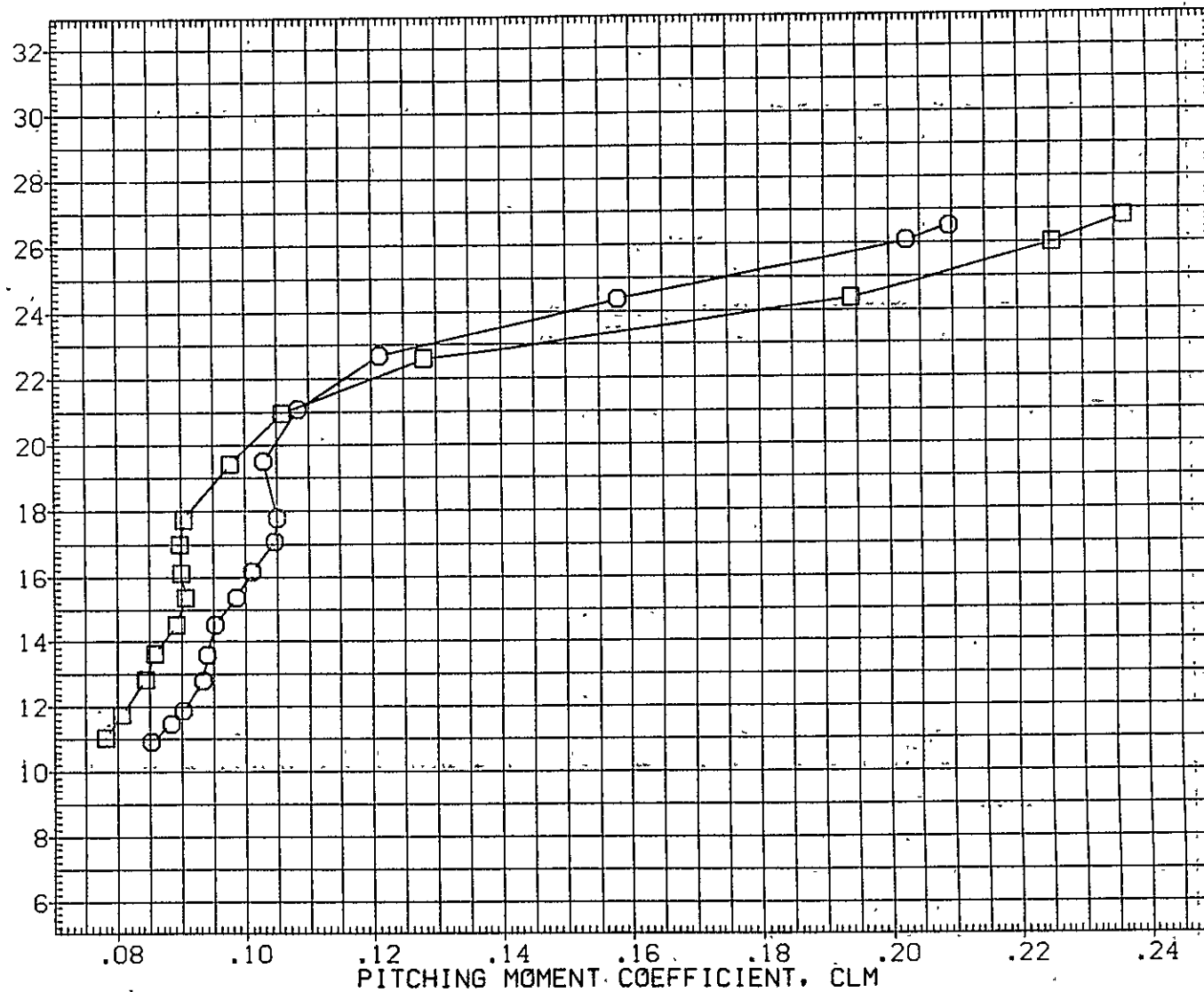


FIG. 98 ORBITER ALONE, TAIL CONE OFF

CA5 ORB TC5

(AGM132)

SYMBOL	MACH	BETA	PARAMETRIC VALUES.
○	.301		.000
□	.501		
◇	.601		
△	.699		

REFERENCE INFORMATION

SREF	2690.0000	SO.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN. X0
YMRP	.0000	IN. Y0
ZMRP	375.0000	IN. Z0
SCALE	.0300	

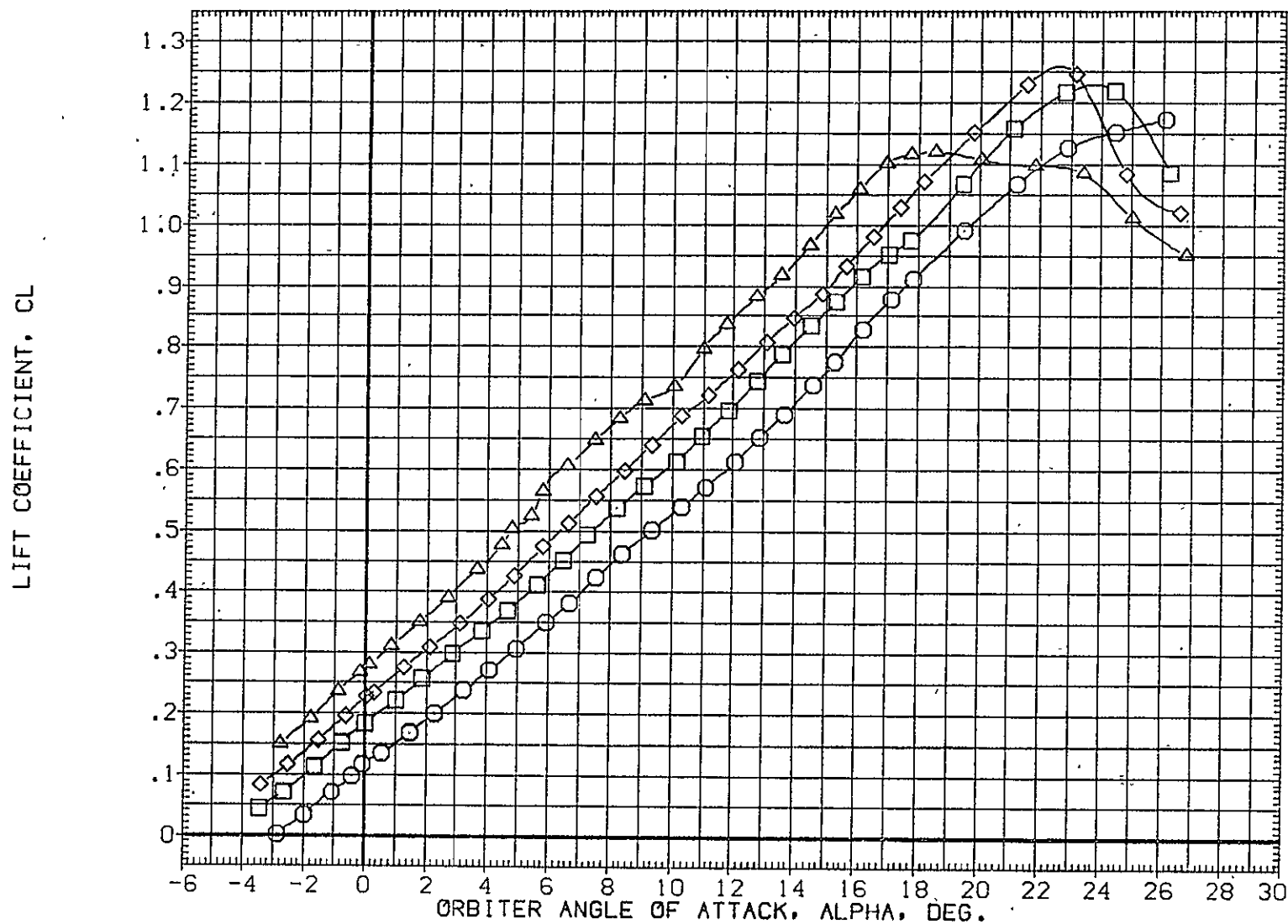


FIG. 99 ORBITER ALONE, TAIL CONE ON

SYMBOL	MACH	BETA	PARAMETRIC VALUES
○	.301		.000
□	.501		
◇	.601		
△	.699		

REFERENCE INFORMATION

SREF	2690.0000	SQ. FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN. X0
YMRP	.0000	IN. Y0
ZMRP	375.0000	IN. Z0
SCALE	.0300	

LIFT COEFFICIENT, CL

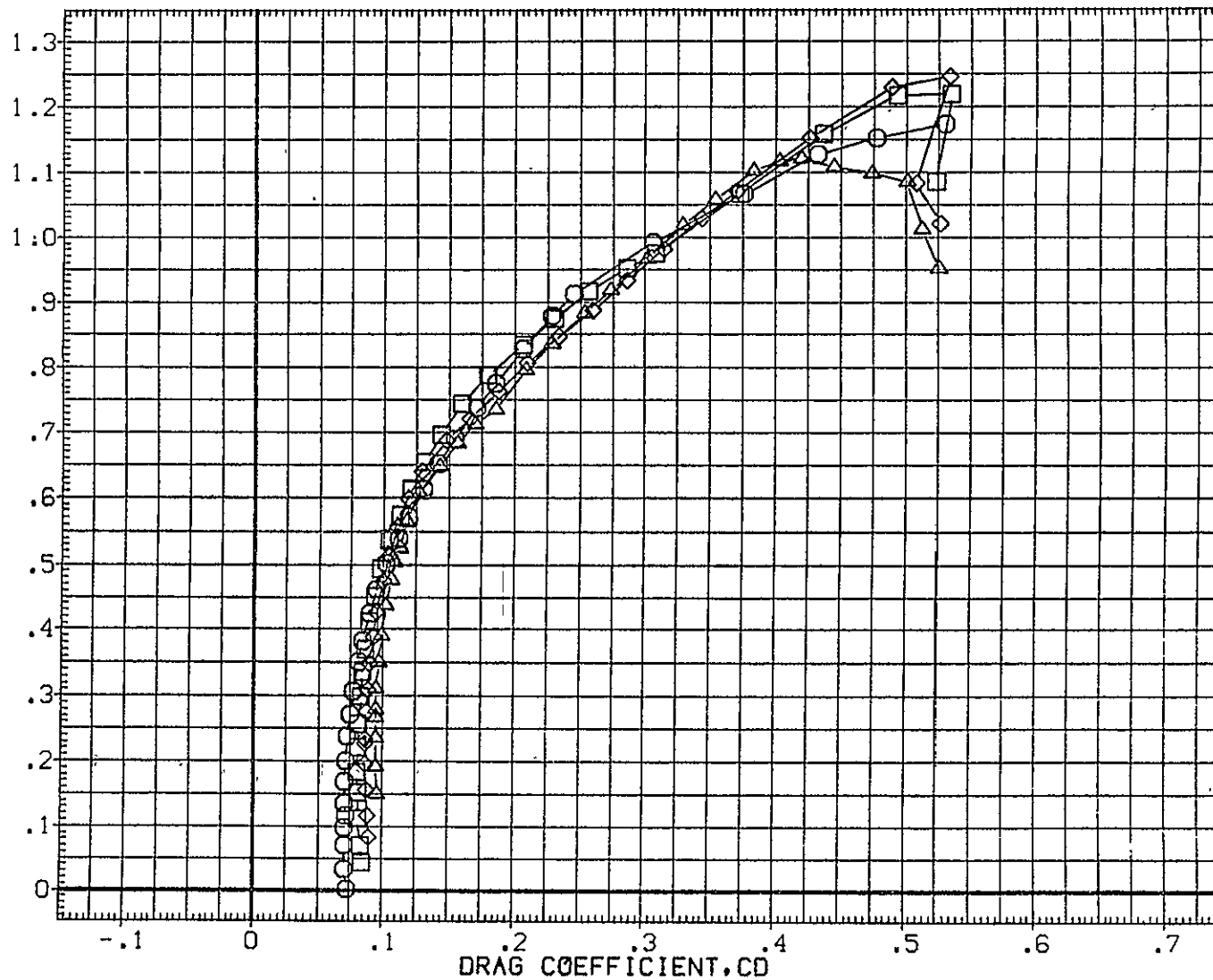


FIG. 99 ORBITER ALONE, TAIL CONE ON

CA5 ORB TC5

(AGM132)

SYMBOL	MACH	BETA	PARAMETRIC VALUES
○	.301		.000
□	.501		
◇	.601		
△	.699		

REFERENCE INFORMATION

SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN. X0
YMRP	.0000	IN. Y0
ZMRP	375.0000	IN. Z0
SCALE	.0300	

LIFT COEFFICIENT, CL

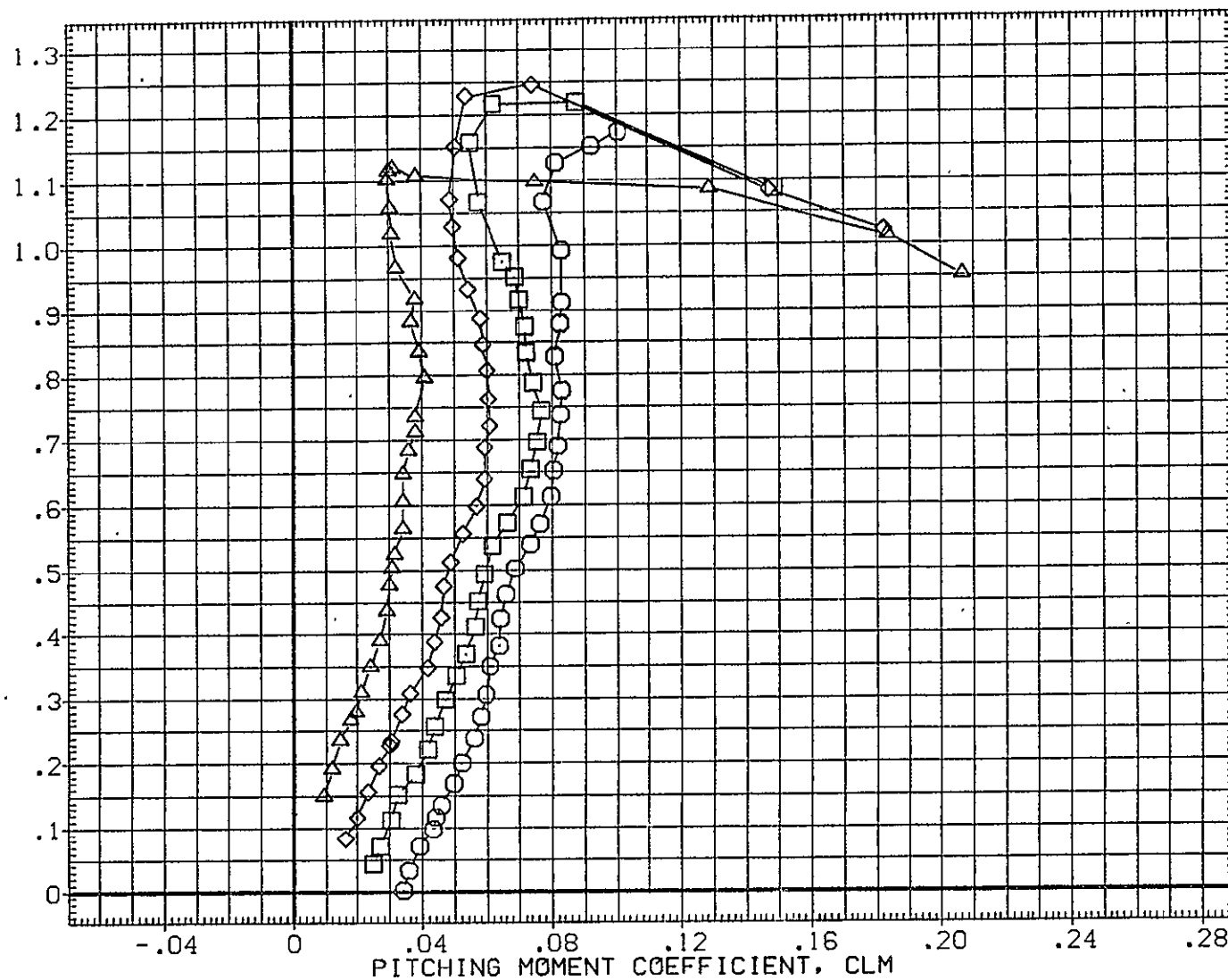


FIG. 99 ORBITER ALONE, TAIL CONE ON

SYMBOL	MACH	BETA	PARAMETRIC VALUES
○	.301		.000 --
□	.501		
◇	.601		
△	.699		

REFERENCE INFORMATION		
SREF	2690.0000	SO.F1.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN. X0
YMRP	.0000	IN. Y0
ZMRP	375.0000	IN. Z0
SCALE	.0300	

ORBITER ANGLE OF ATTACK, ALPHA, DEG.

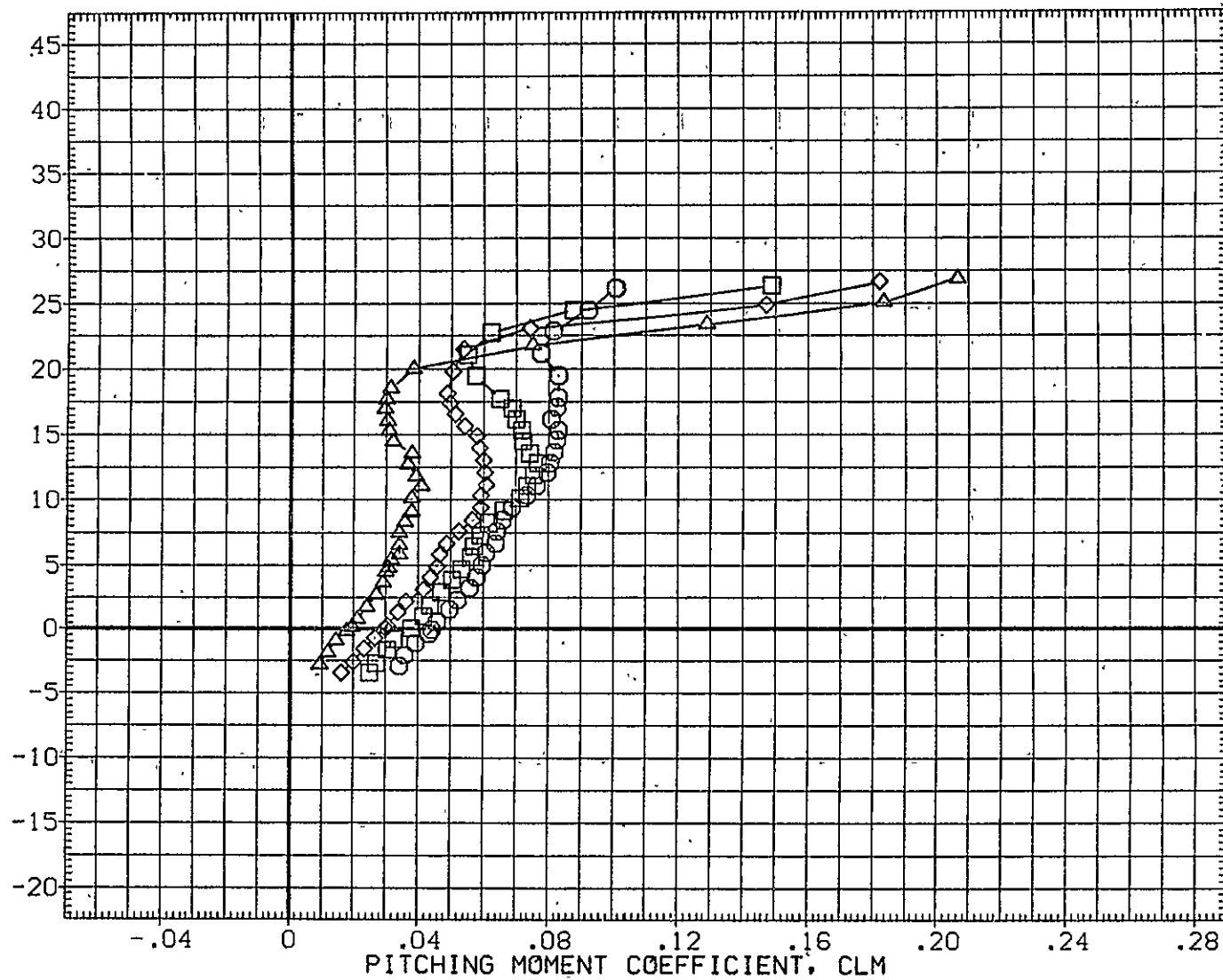


FIG. 99 ORBITER ALONE, TAIL CONE ON

BTWT-1431CA5 K1 FO H15.1A V9.1

(RGM041)

SYMBOL

○
□
◇
△
▽

MACH

ALPHA1

PARAMETRIC VALUES

6.000

STAB

-2.000

RUD-U

.000

RUD-L

.000

ELV-1B

.000

ELV-0B

3.000

S1-2

.000

S3-4

.000

S5-6

.000

REFERENCE INFORMATION

SREF 5500.0000 SQ.FT.
LREF 137.8000 IN.
BREF 2348.0000 IN.
XMRP 1339.9100 IN. XC
YMRP .0000 IN. YC
ZMRP 190.7500 IN. ZC
SCALE .0300

SIDE FORCE COEFFICIENT, CY

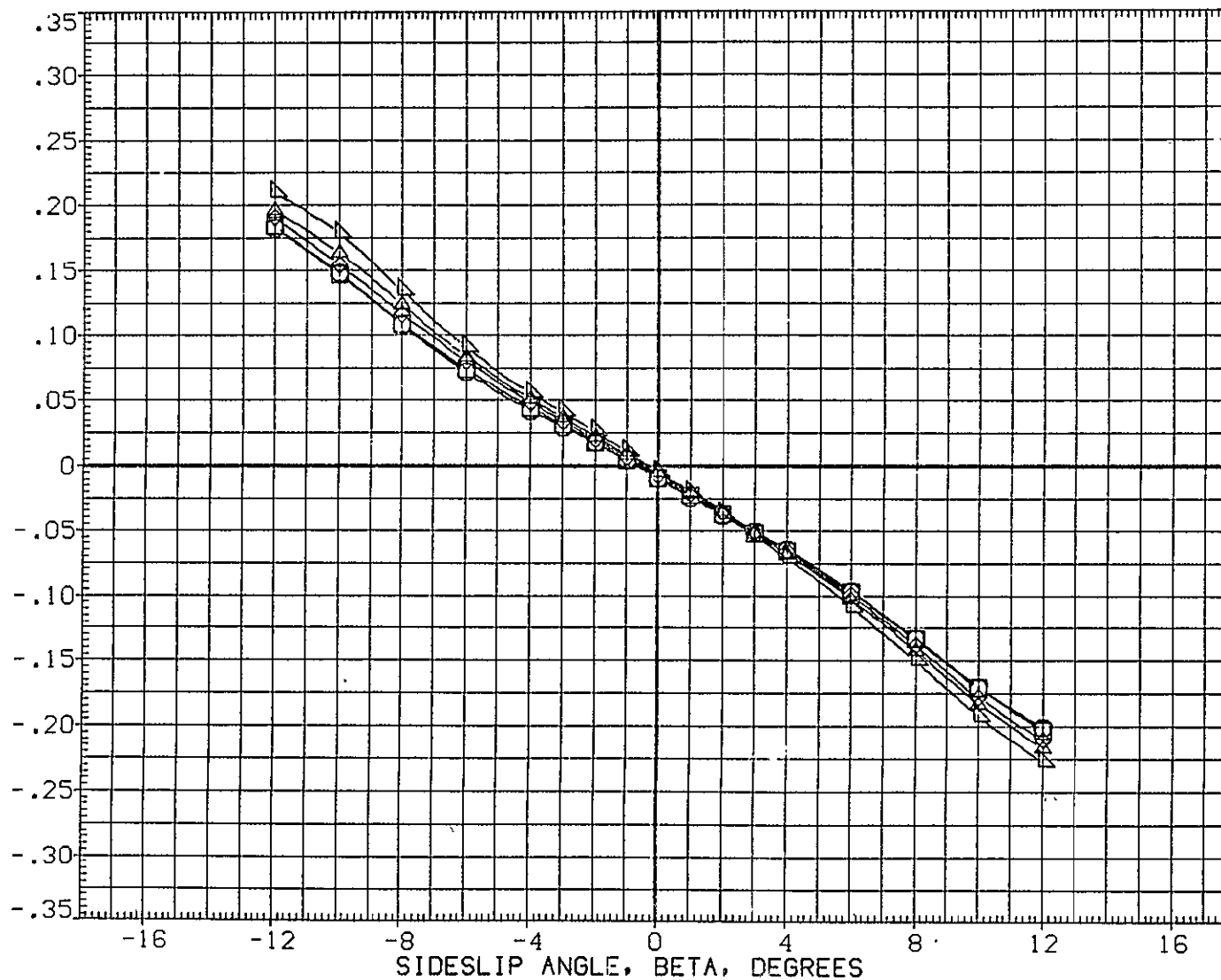


FIG.100 747 ALONE, BASIC AIRPLANE, FLAPS UP, TAIL ON, ALPHA1=6 DEG

SYMBOL

○
□
◇
△
▽

MACH

PARAMETRIC VALUES

.150	ALPHA1	6.000	STAB	-2.000
.300	RUD-U	.000	RUD-L	.000
.500	ELV-1B	.000	ELV-0B	3.000
.600	S1-2	.000	S3-4	.000
.700	S5-6	.000		

REFERENCE INFORMATION

SREF	5500.0000	SQ.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

YAWING MOMENT COEFFICIENT, CLN. (STABILITY AXIS)

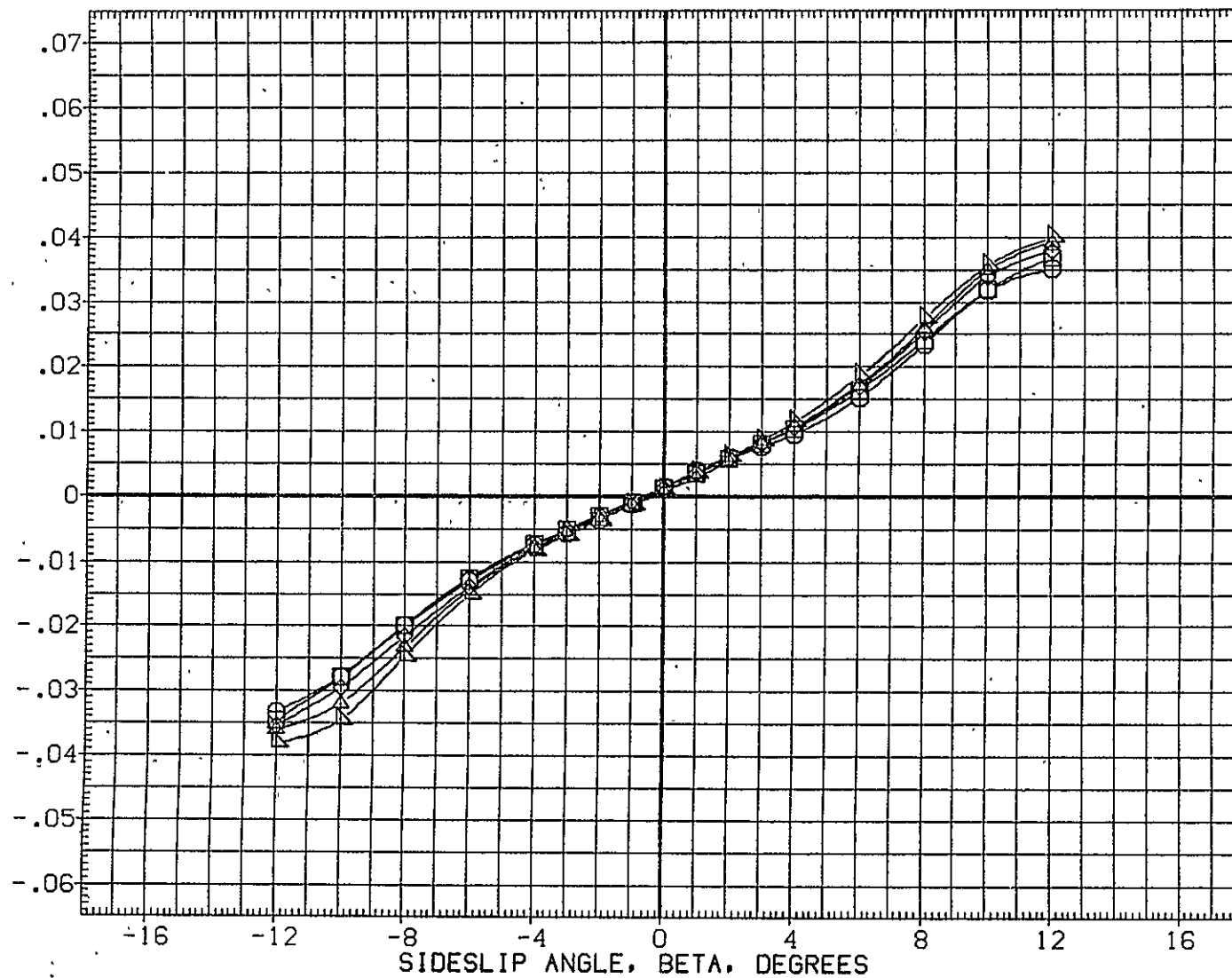


FIG.100 747 ALONE, BASIC AIRPLANE, FLAPS UP, TAIL ON, ALPHA1=6 DEG

BTWT-1431CA5 K1 F0 H15.1A V9.1

(RGM041)

SYMBOL	MACH	PARAMETRIC VALUES
○	.150	ALPHA1 6.000 STAB -2.000
□	.300	RUD-U .000 RUD-L .000
◇	.500	ELV-18 .000 ELV-08 3.000
△	.600	S1-2 .000 S3-4 .000
▽	.700	S5-6 .000

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XM RP	1339.9100	IN. XC
YM RP	.0000	IN. YC
ZM RP	190.7500	IN. ZC
SCALE	.0300	

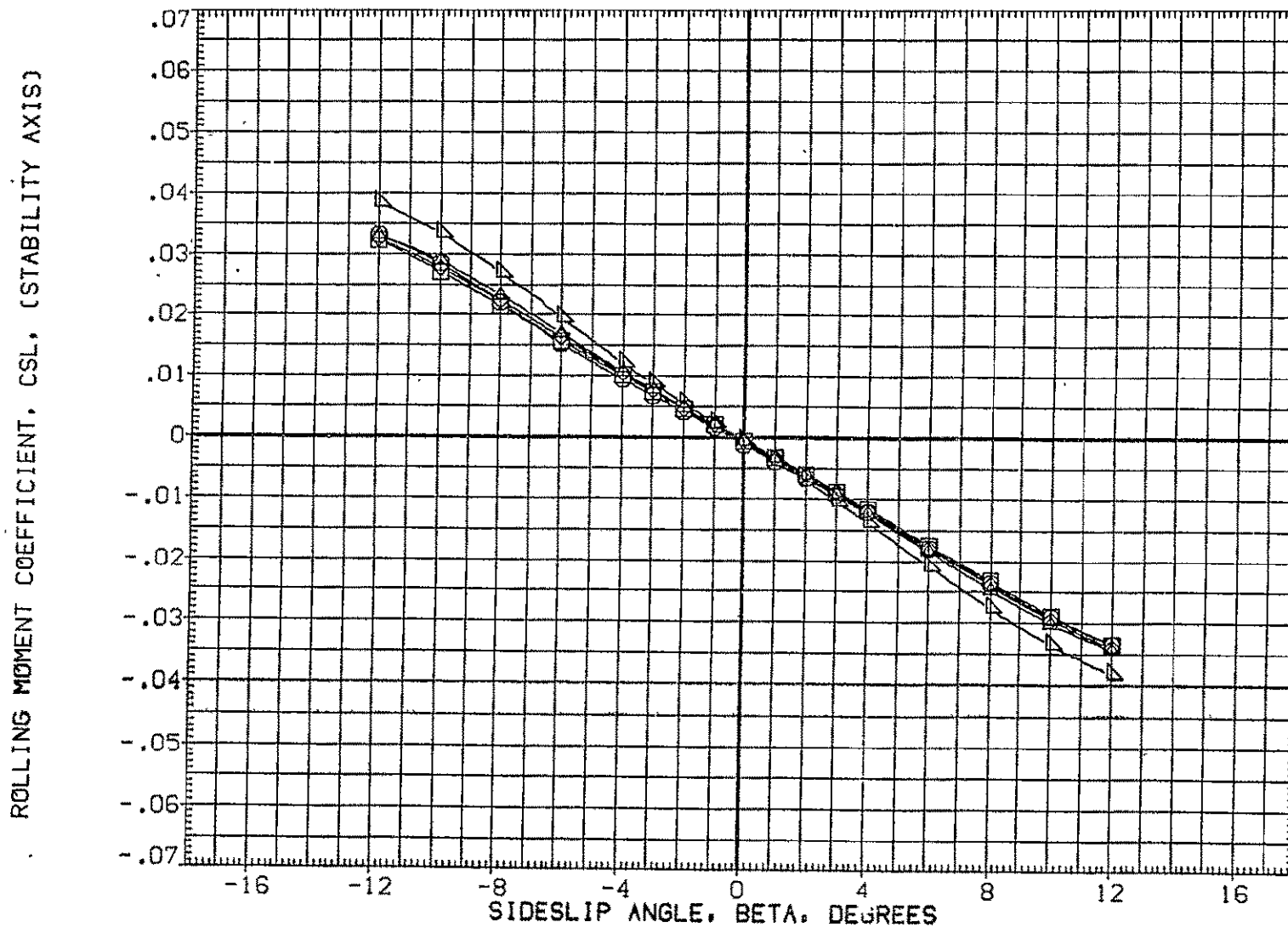


FIG.100 747 ALONE, BASIC AIRPLANE, FLAPS UP, TAIL ON, ALPHA1=6 DEG

SYMBOL	MACH	PARAMETRIC VALUES
○	.150	ALPHA1 6.000 STAB -2.000
□	.300	RUD-U .000 RUD-L .000
◇	.500	ELV-1B .000 ELV-0B 3.000
△	.600	S1-2 .000 S3-4 .000
▽	.700	S5-6 .000

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

SIDE FORCE COEFFICIENT, CY

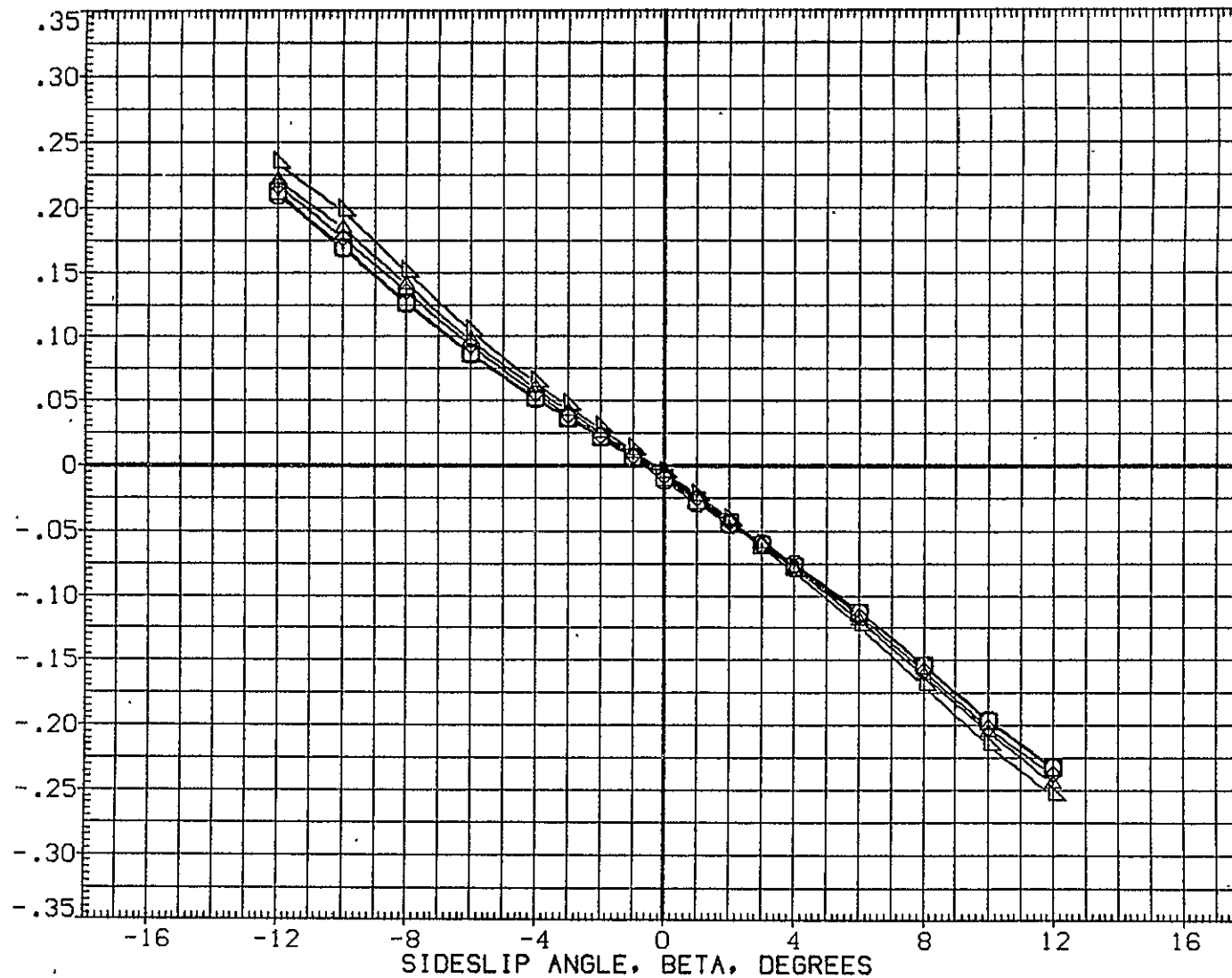


FIG.101 747 ALONE+ TIP FINS, FLAPS UP, TAIL ON, ALPHA1= 6 DEG

BTWT-1431CA5 K1 F0 H15.6 V9.1

(RGM043)

SYMBOL MACH PARAMETRIC VALUES

○	.150	ALPHA1	6.000	STAB	-2.000
□	.300	RUD-U	.000	RUD-L	.000
◇	.500	ELV-1B	.000	ELV-0B	3.000
△	.600	S1-2	.000	S3-4	.000
▽	.700	S5-6	.000		

REFERENCE INFORMATION

SREF	5500.0000	SQ.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

YAWING MOMENT COEFFICIENT, CLN, (STABILITY AXIS)

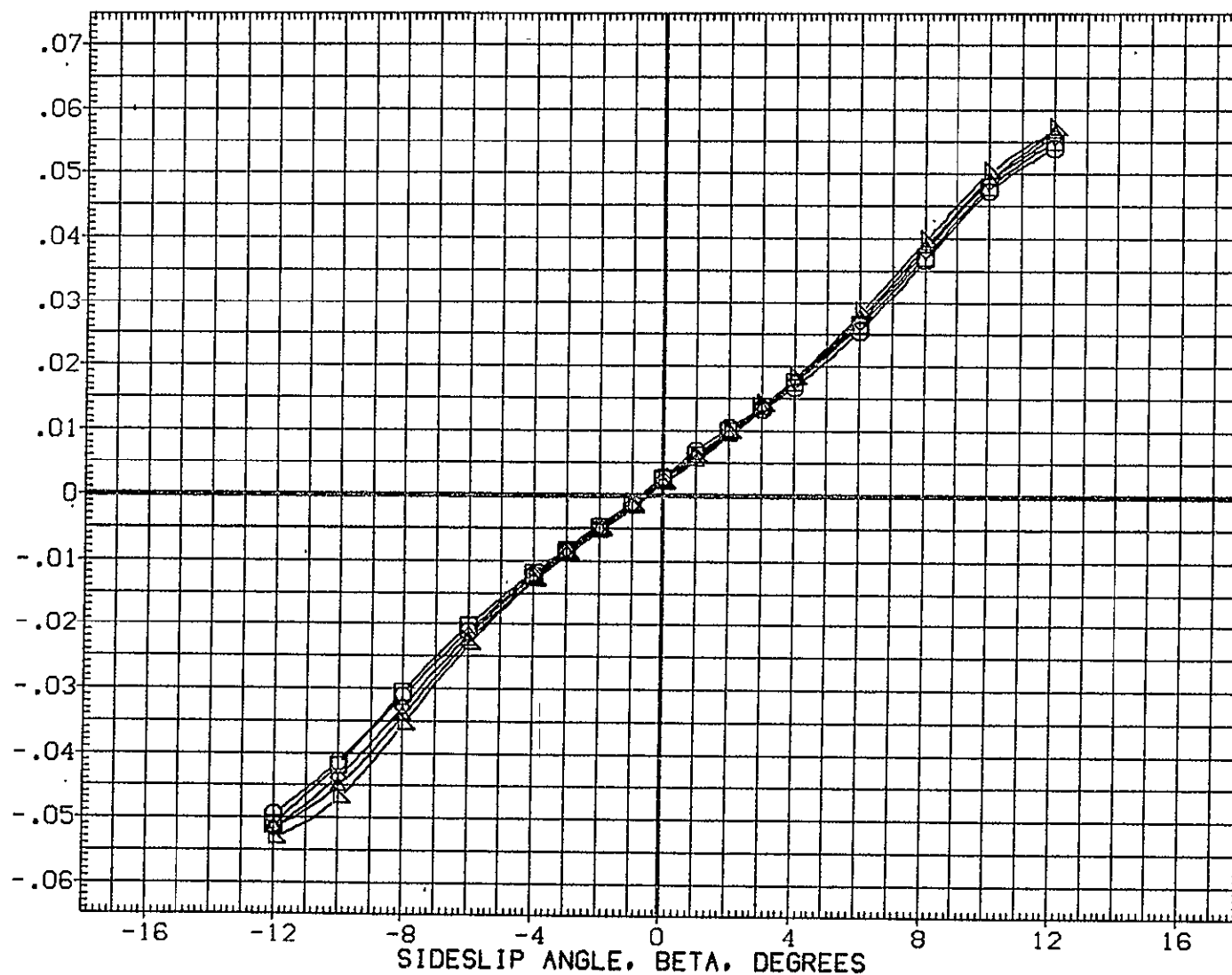


FIG.101 747 ALONE+ TIP FINS, FLAPS UP, TAIL ON, ALPHA1= 6 DEG

SYMBOL	MACH	PARAMETRIC VALUES	REFERENCE INFORMATION
○	.150	ALPHA1 6.000 STAB -2.000	SREF 5500.0000 SQ.FT.
□	.300	RUD-U .000 RUD-L .000	LREF 327.8000 IN.
◇	.500	ELV-1B .000 ELV-0B 3.000	BREF 2348.0000 IN.
△	.600	S1-2 .000 S3-4 .000	XMRP 1339.9100 IN. XC
▽	.700	S5-6 .000	YMRP .0000 IN. YC
			ZMRP 190.7500 IN. ZC
			SCALE .0300

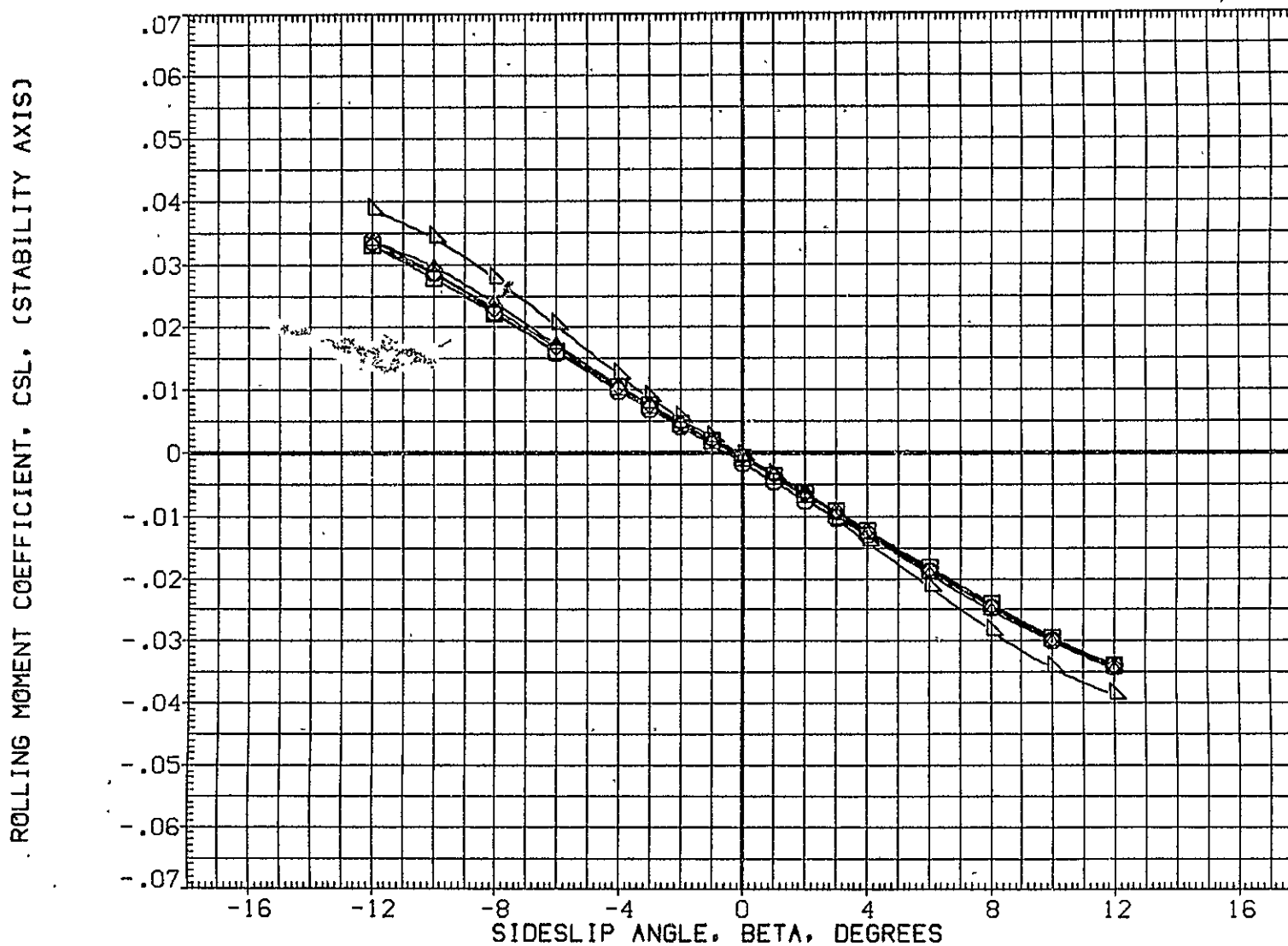


FIG.101 747 ALONE+ TIP FINS, FLAPS UP, TAIL ON, ALPHA1= 6 DEG

BTWT-1431CA5 K1 F0 H15.6 V9.1 AT38 AT39

(RGM050)

SYMBOL

○
□

MACH

.500
.600

ALPHA I

RUD-U

ELV-1B

S1-2

S5-6

PARAMETRIC VALUES

6.000

15.000

.000

.000

20.000

STAB

RUD-L

ELV-0B

S3-4

-1.000

15.000

3.000

45.000

REFERENCE INFORMATION

SREF	5500.0000	SQ.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

SIDE FORCE COEFFICIENT, CY

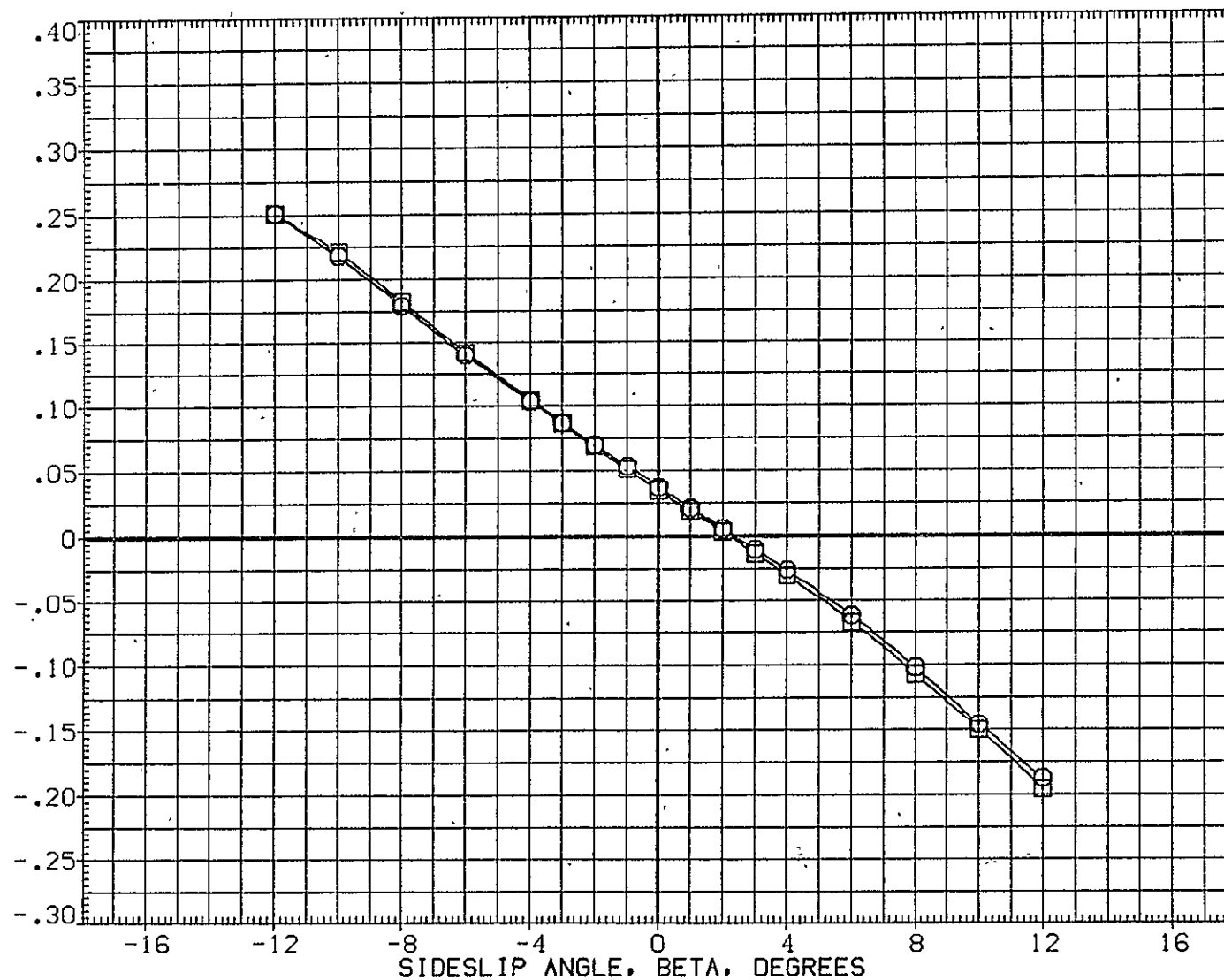


FIG.102 747 ALONE+ TIP FINS+STD SPD BRK+ORB SUPPORTS, FLAPS UP, RUDDER=15/15

SYMBOL	MACH	PARAMETRIC VALUES			
○	.500	ALPHA1	6.000	STAB	1.000
□	.600	RUD-U	15.000	RUD-L	15.000
		ELV-1B	7.000	ELV-0B	3.000
		S1-2	.000	S3-4	45.000
		S5-6	20.000		

REFERENCE INFORMATION		
SREF	5500.0000	SO.FT.
LREF	327.6000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

YAWING MOMENT COEFFICIENT, CLN, (STABILITY AXIS)

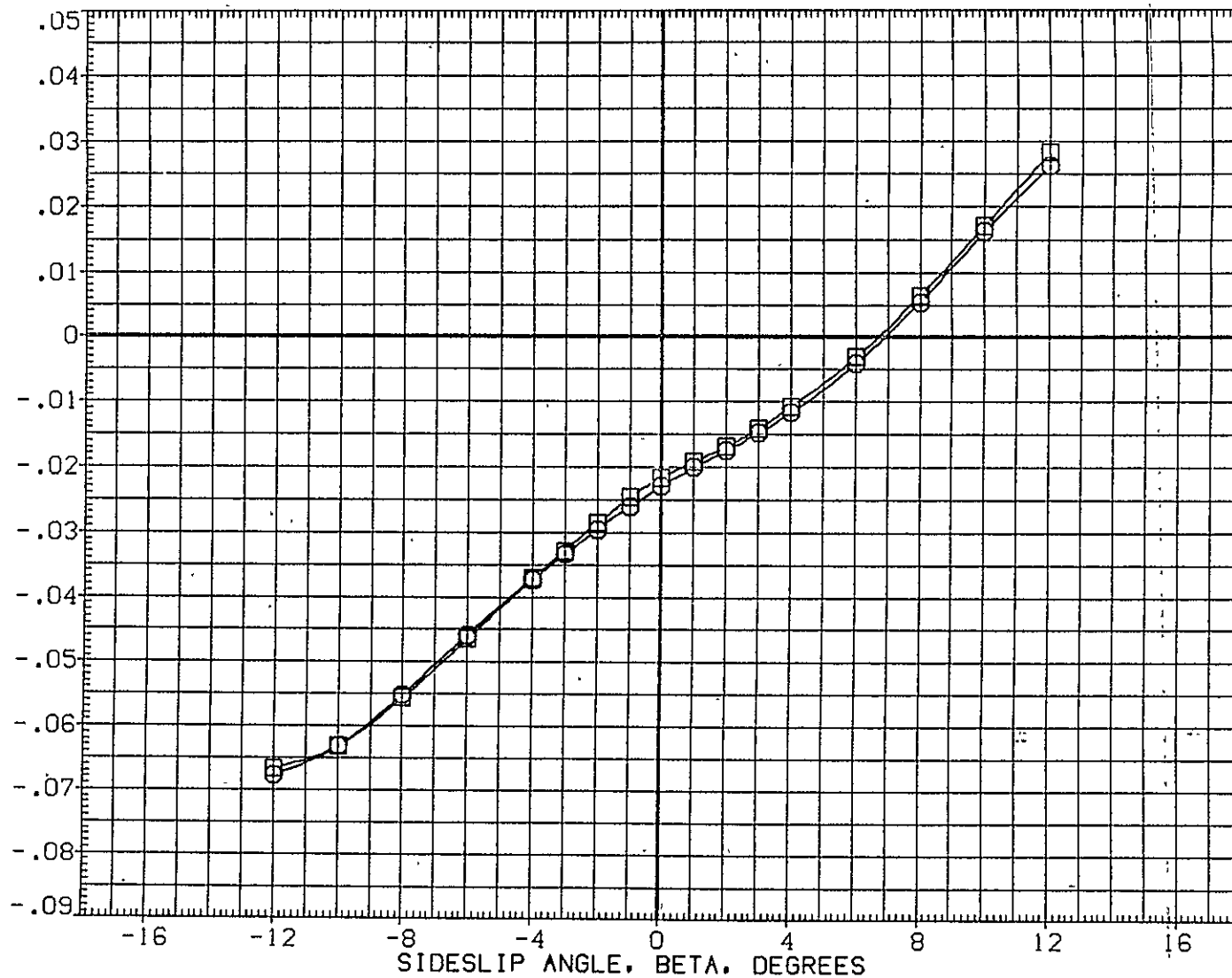


FIG.102 747 ALONE+ TIP FINS+STD SPD BRK+ORB SUPPORTS, FLAPS UP, RUDDER=15/15

BTWT-1431CA5 K1 FO H15.6 V9.1 AT38 AT39

(RGM050)

SYMBOL	MACH	PARAMETRIC VALUES			
○	.500	ALPHA1	6.000	STAB	1.000
	.600	RUD-U	15.000	RUD-L	15.000
		ELV-1B	.000	ELV-0B	3.000
		S1-2	.000	S3-4	45.000
		S5-6	20.000		

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

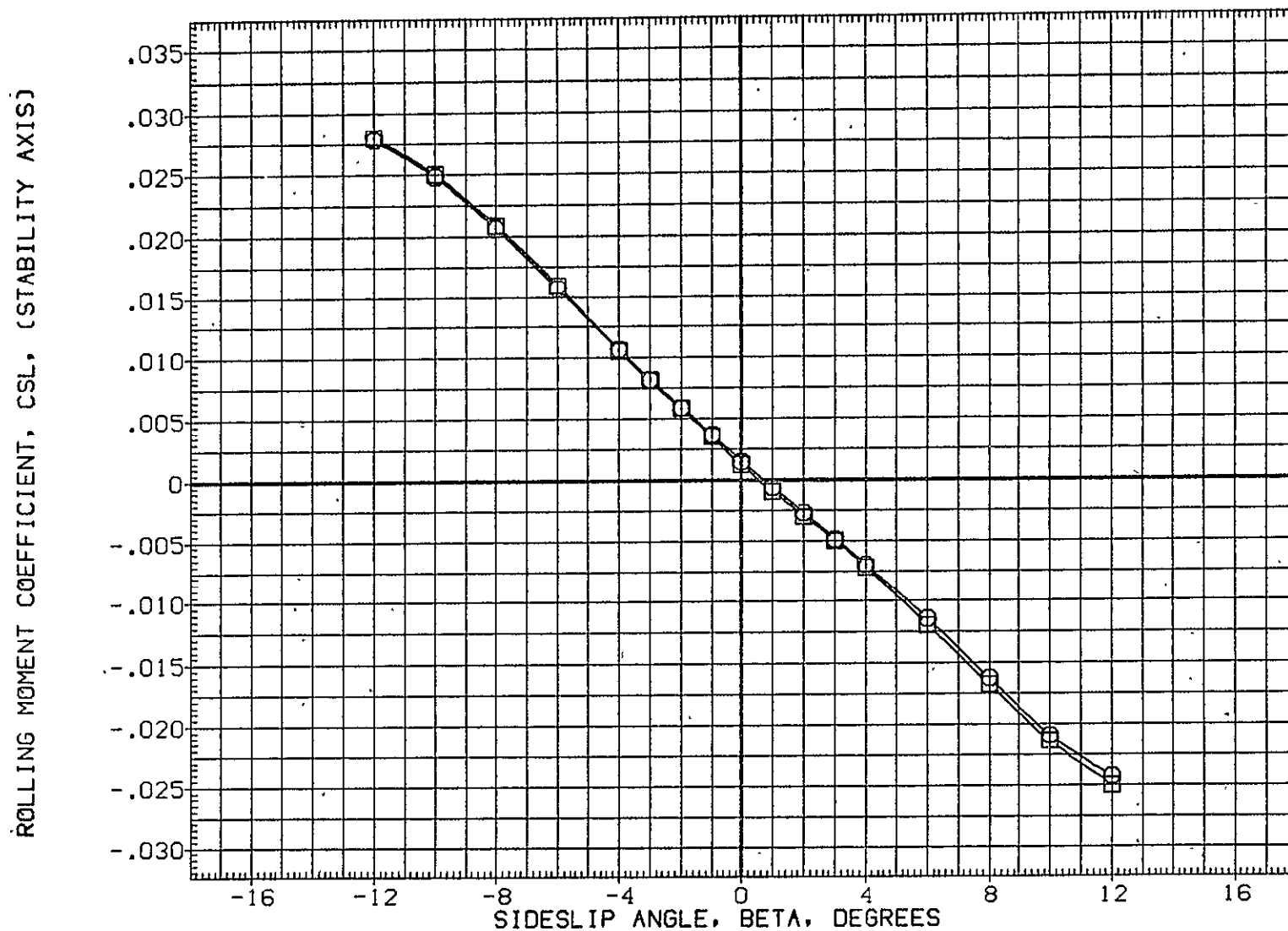


FIG.102 747 ALONE+ TIP FINS+STD SPD BRK+ORB SUPPORTS, FLAPS UP, RUDDER=15/15

SYMBOL	MACH	PARAMETRIC VALUES				REFERENCE INFORMATION		
		ALPHA I	6.000	STAB	1.000	SREF	5500.0000	SQ.FT.
○	.500	RUD-U	.000	RUD-L	.000	LREF	327.8000	IN.
□	.600	ELV-1B	.000	ELV-0B	3.000	BREF	2348.0000	IN.
◇	.699	S1-2	.000	S3-4	45.000	XMRP	1339.9100	IN. XC
		S5-6	20.000			YMRP	.0000	IN. YC
						ZMRP	190.7500	IN. ZC
						SCALE	.0300	

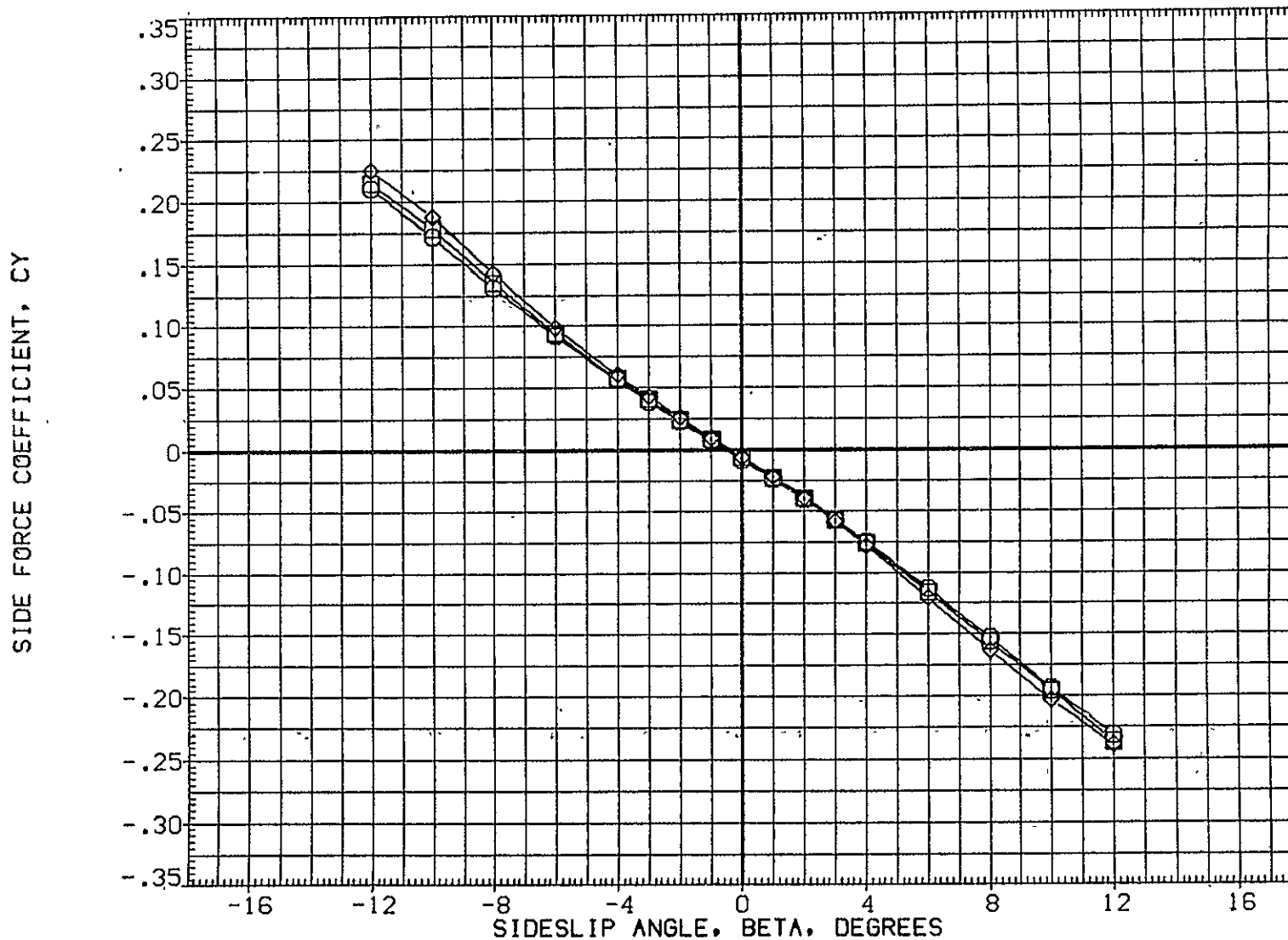


FIG.103 747 ALONE+ TIP FINS+STD SPD BRK+ORB SUPPORTS, FLAPS UP, ALPHA I= 6 DEG

BTWT-1431CA5 K1 FO H15.6 V9.1 AT38 AT39

(RGM051)

SYMBOL

○
□
◇

MACH

ALPHA1

PARAMETRIC VALUES

6.000

STAB

1.000

RUD-U

.000

RUD-L

.000

ELV-IB

.000

ELV-OB

3.000

S1-2

.000

S3-4

45.000

S5-6

20.000

REFERENCE INFORMATION

SREF	5500.0000	SQ.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

YAWING MOMENT COEFFICIENT, CLN, (STABILITY AXIS)

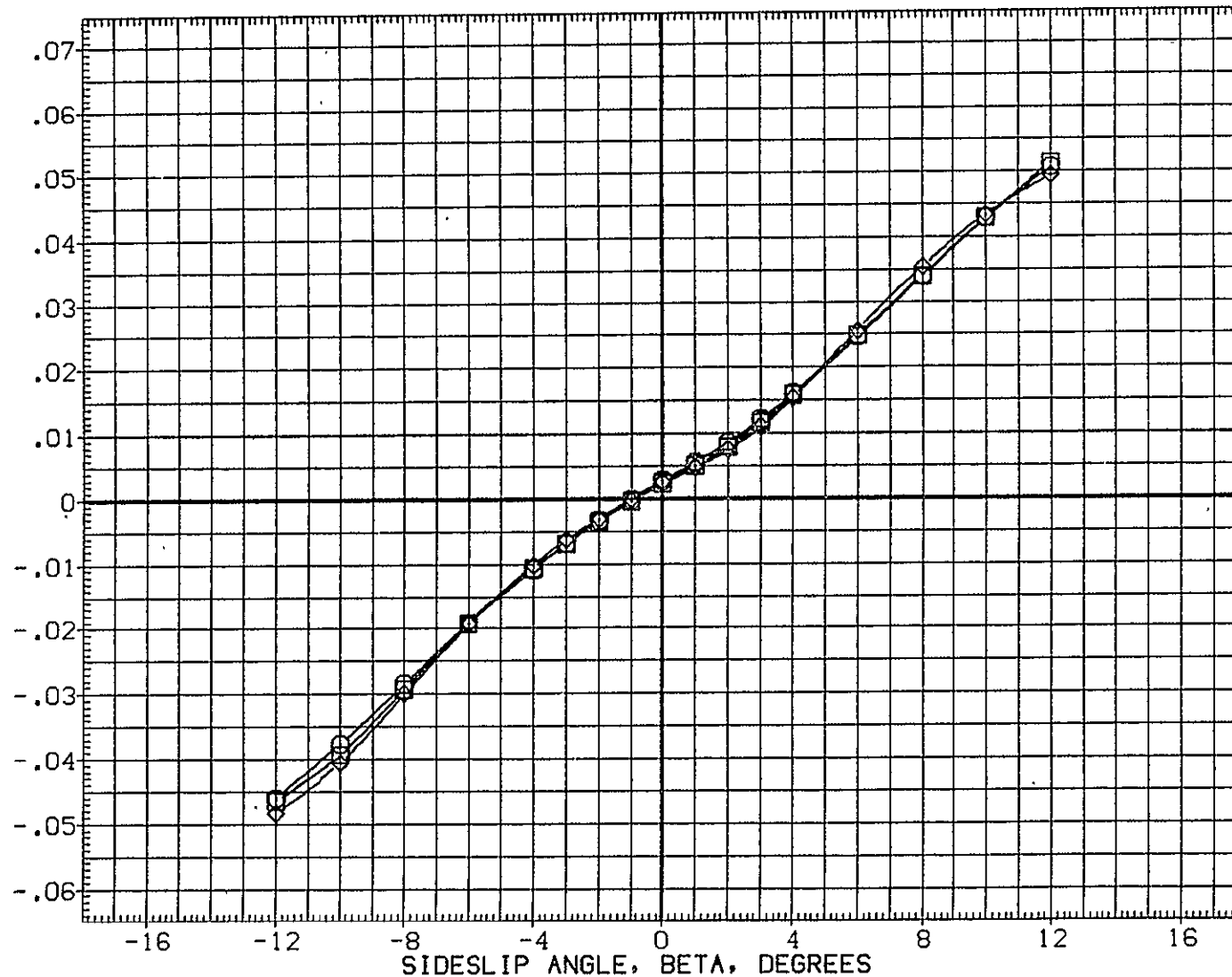


FIG.103 747 ALONE+ TIP FINS+STD SPD BRK+ORB SUPPORTS, FLAPS UP, ALPHA1= 6 DEG

SYMBOL	MACH	PARAMETRIC VALUES
○	.500	ALPHA1 6.000 STAB 1.000
□	.600	RUD-U .000 RUD-L .000
◇	.699	ELV-1B .000 ELV-OB 3.000
		S1-2 .000 S3-4 45.000
		S5-6 20.000

REFERENCE INFORMATION		
SREF	5500.0000	SG.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

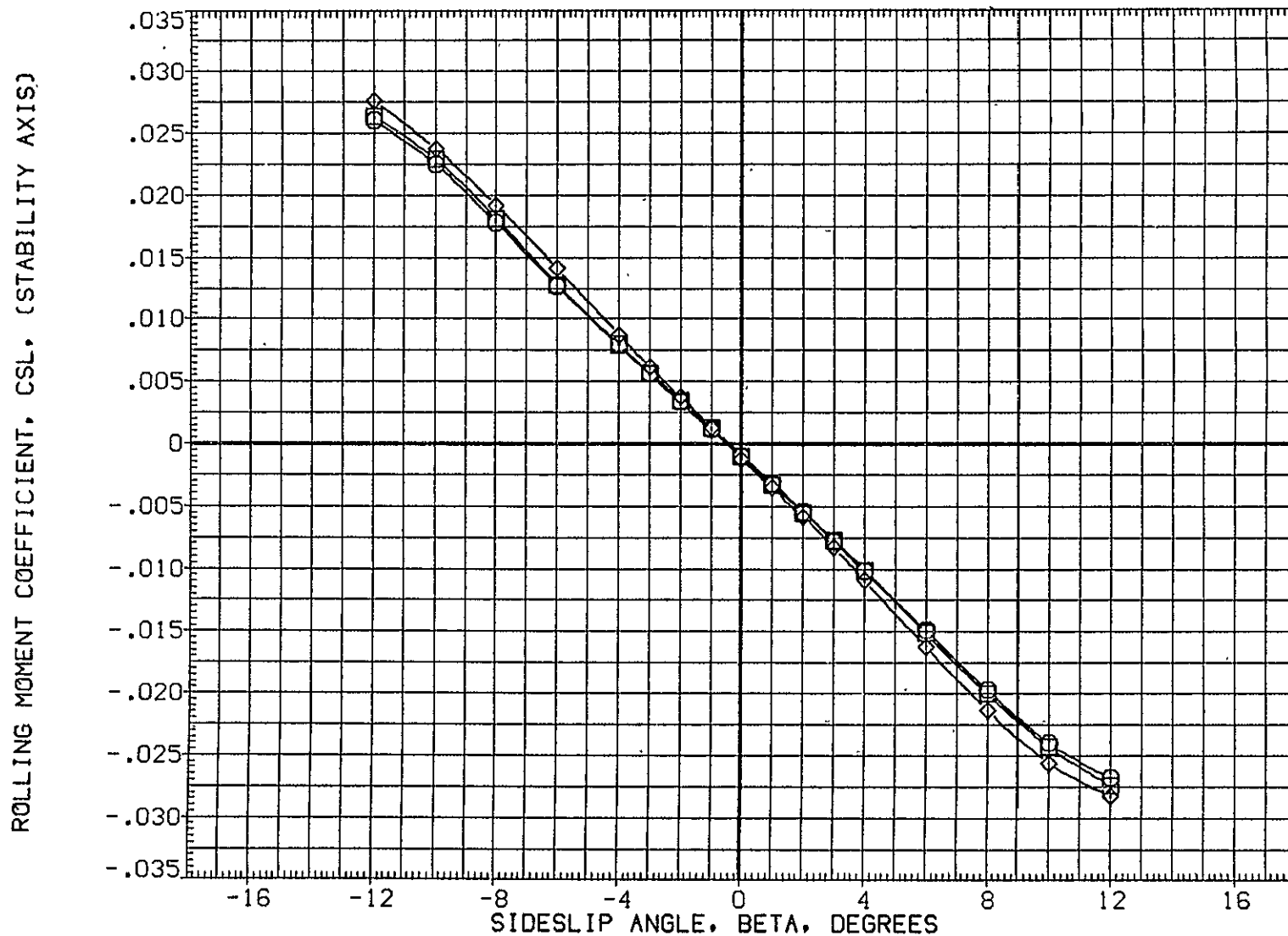


FIG.103 747 ALONE+ TIP FINS+STD SPD BRK+ORB SUPPORTS, FLAPS UP, ALPHA1= 6 DEG

BTWT-1431CA5 K1 FO H15.1A

(RGM055)

SYMBOL	MACH	PARAMETRIC VALUES
○	.150	ALPHA1 6.000 STAB -1.900
□	.300	ELV-1B .000 ELV-0B 3.000
◇	.500	S1-2 .000 S3-4 .000
△	.600	S5-6 .000
▽	.700	

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

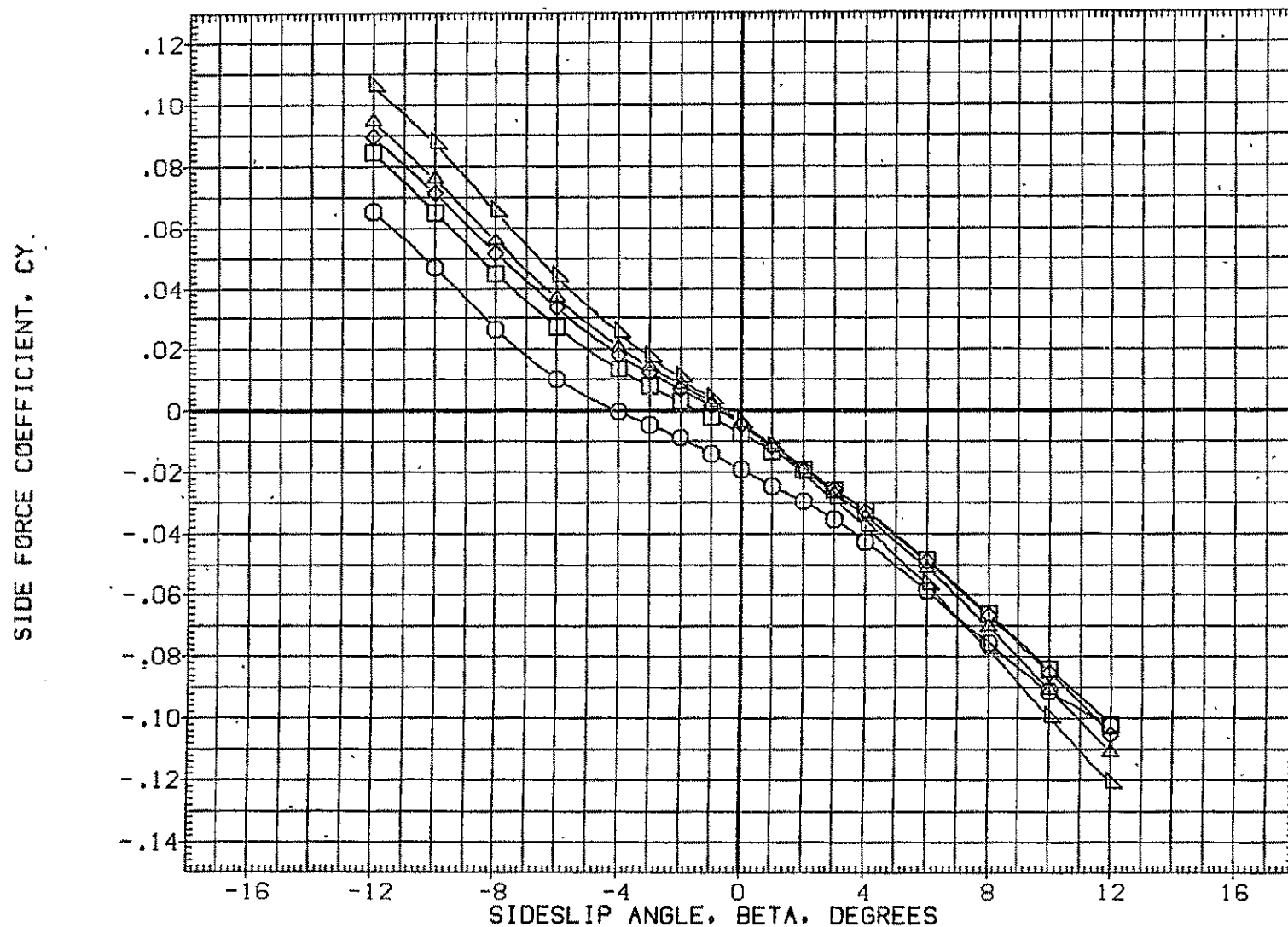


FIG.104 747 ALONE, VERTICAL TAIL OFF, FLAPS 20, ALPHA1= 6 DEG (S=-1.9)

SYMBOL	MACH	PARAMETRIC VALUES
○	.150	ALPHA1 6.000 STAB -1.900
□	.300	ELV-1B .000 ELV-0B 3.000
◇	.500	S1-2 .000 S3-4 .000
△	.600	S5-6 .000
▽	.700	

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

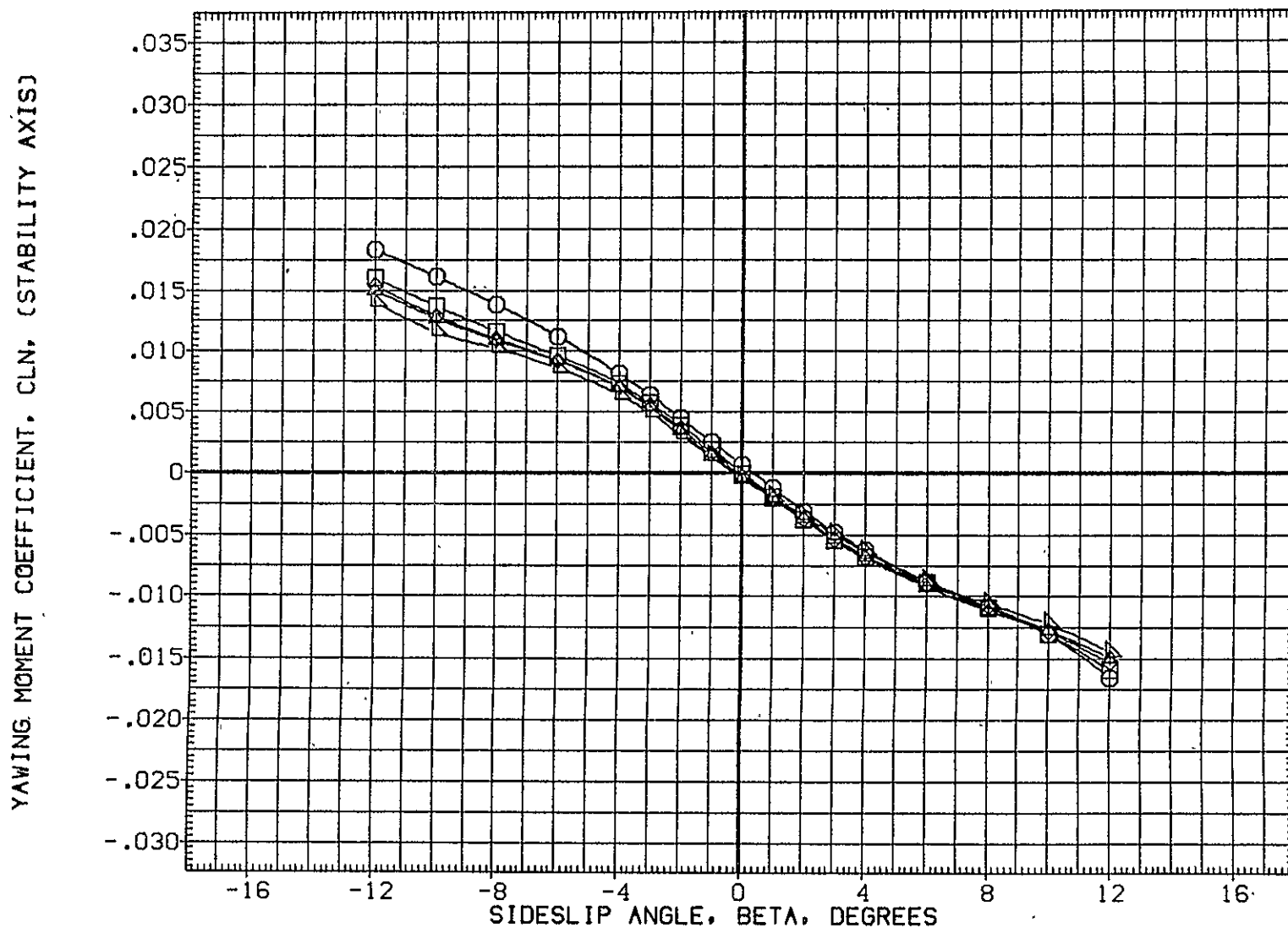


FIG.104 747 ALONE, VERTICAL TAIL OFF, FLAPS 20, ALPHA1= 6 DEG (S=-1.9)

BTWT-1431CA5 K1 FO H15.1A

(RGM055)

SYMBOL	MACH	ALPHA	PARAMETRIC VALUES	STAB	SCALE	REFERENCE INFORMATION
○	.150	6.000	STAB	-1.900		SREF 5500.0000 SQ.FT.
□	.300	ELV-1B	.000	ELV-0B	3.000	LREF 327.8000 IN.
◇	.500	S1-2	.000	S3-4	.000	BREF 2348.0000 IN.
△	.600	S5-6	.000			XMRP 1339.9100 IN. XC
▽	.700					YMRP .0000 IN. YC
						ZMRP 190.7500 IN. ZC
						SCALE .0300

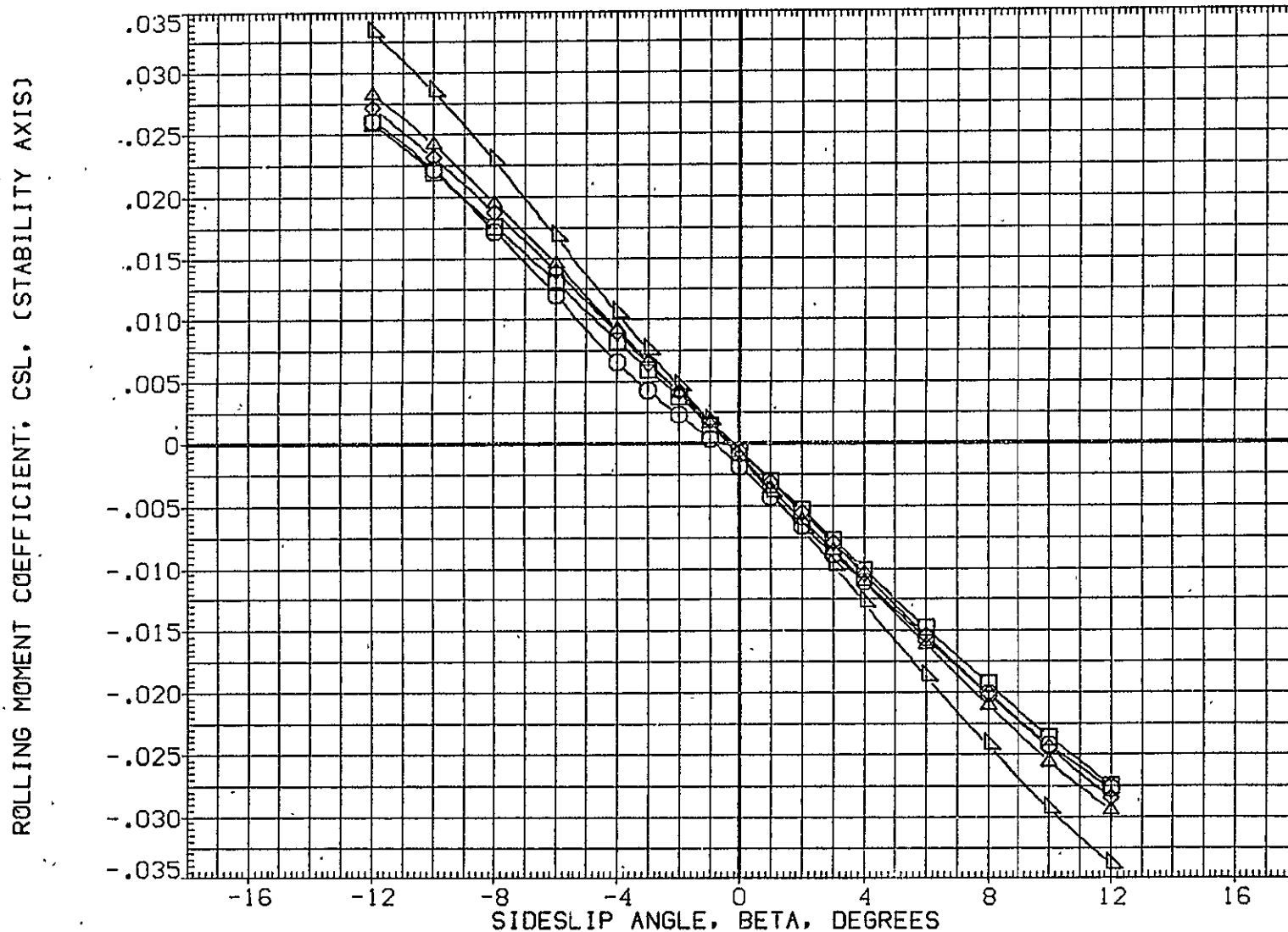


FIG.104 747 ALONE, VERTICAL TAIL OFF, FLAPS 20, ALPHA= 6 DEG (S=-1.9)

SYMBOL	MACH	ALPHA I	PARAMETRIC VALUES	STAB	1.000
○	.500	ELV-1B	.000	ELV-0B	3.000
□	.600	S1-2	.000	S3-4	.000
◇	.700	S5-6	.000		

REFERENCE INFORMATION		
SREF	5500.0000	SG.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

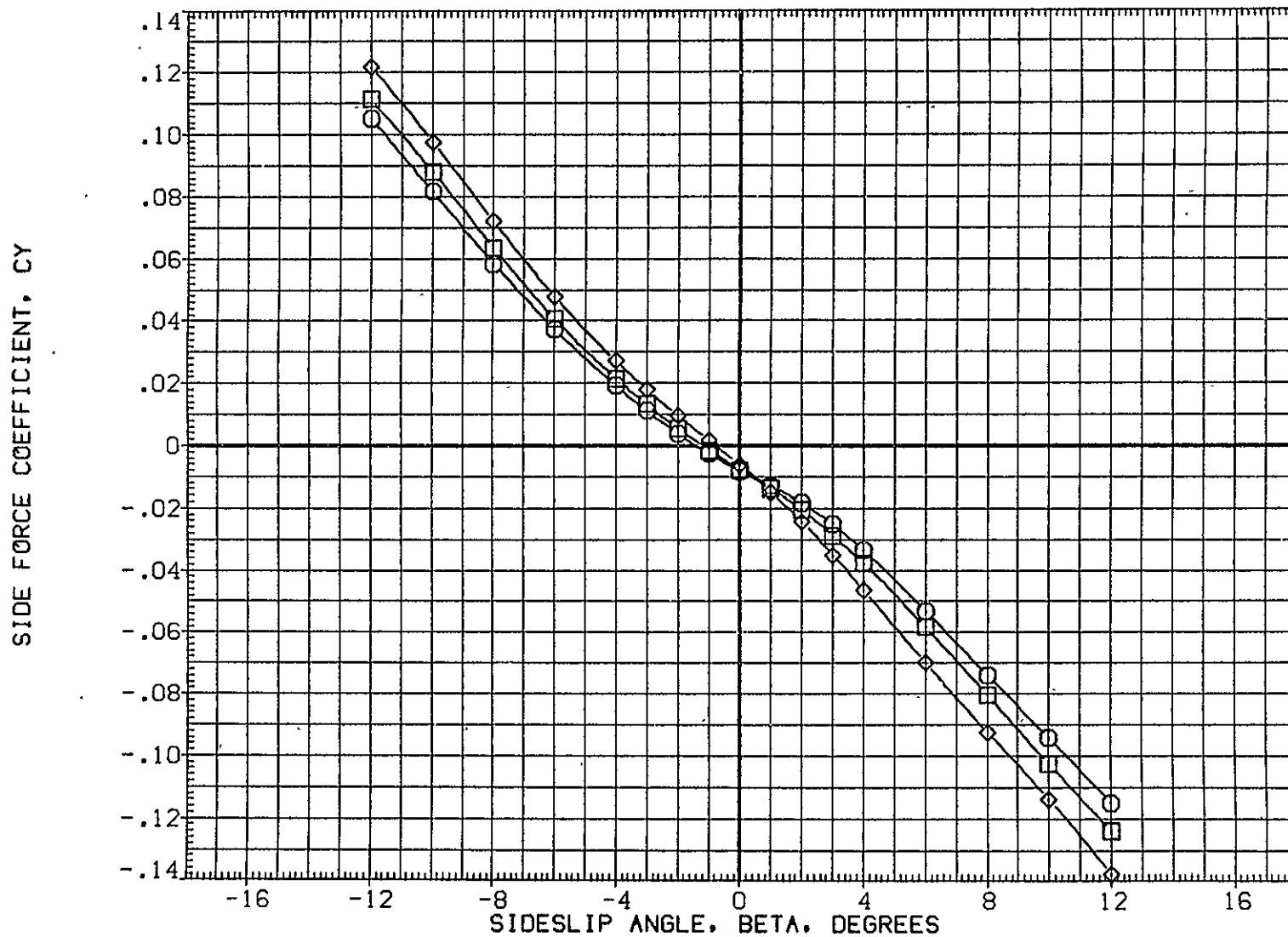


FIG.105 747 ALONE, VERTICAL TAIL OFF, FLAPS 20, ALPHA I= 6 DEG (S=+1)

BTWT-1431CA5 K1 F20 H15.1A

(R6M056)

SYMBOL	MACH	ALPHA	PARAMETRIC VALUES	STAB	
○	.500	6.000	6.000	1.000	
□	.600	ELV-18	.000	ELV-08	3.000
◇	.700	S1-2	.000	S3-4	.000
		S5-6	.000		

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

YAWING MOMENT COEFFICIENT, CLN, (STABILITY AXIS)

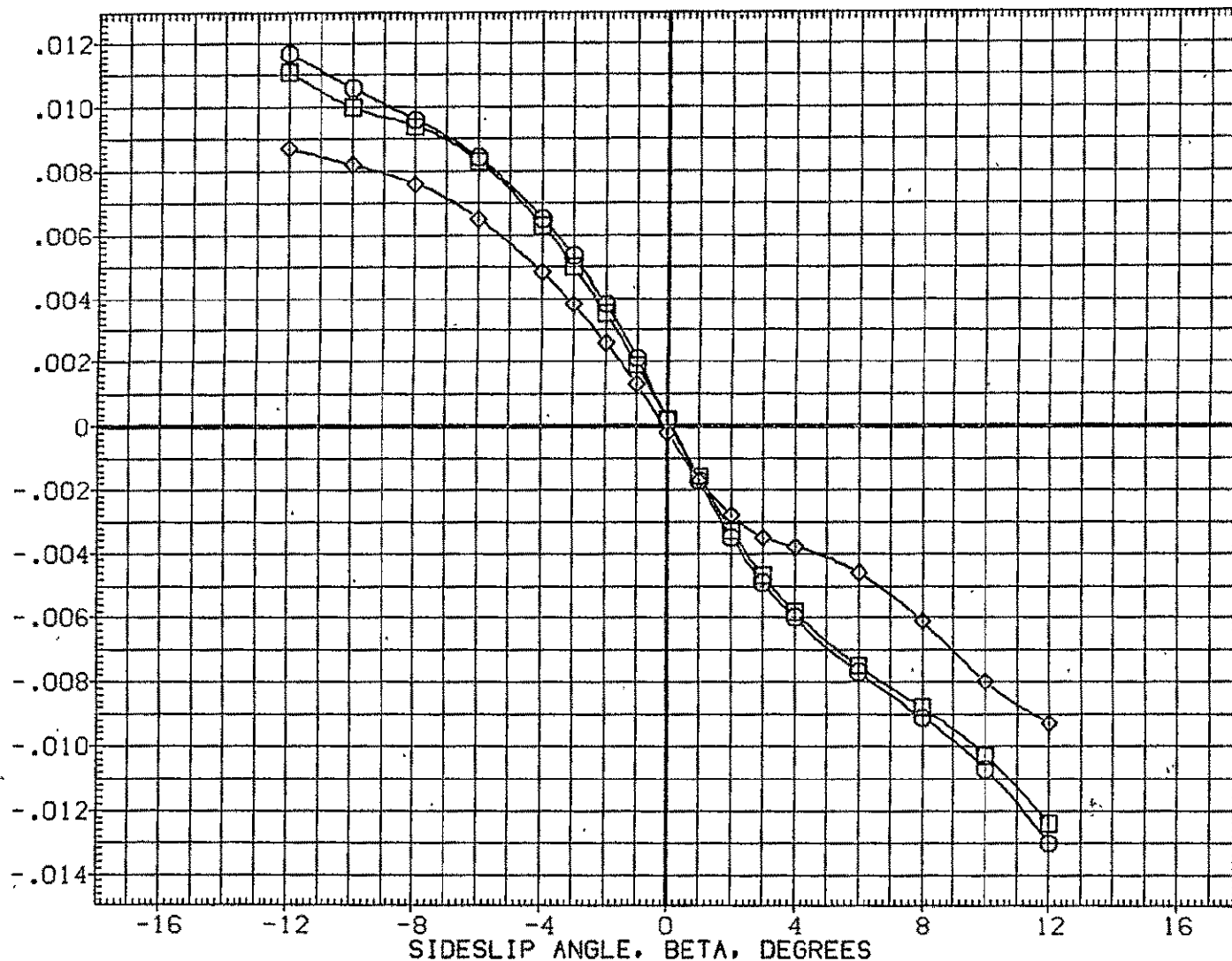


FIG.105 747 ALONE, VERTICAL TAIL OFF, FLAPS 20, ALPHA= 6 DEG (S=+1)

SYMBOL	MACH	PARAMETRIC VALUES
○	.500	ALPHA1 6.000 STAB 1.000
□	.600	ELV-1B .000 ELV-0B 3.000
◇	.700	S1-2 .000 S3-4 .000
		S5-6 .000

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

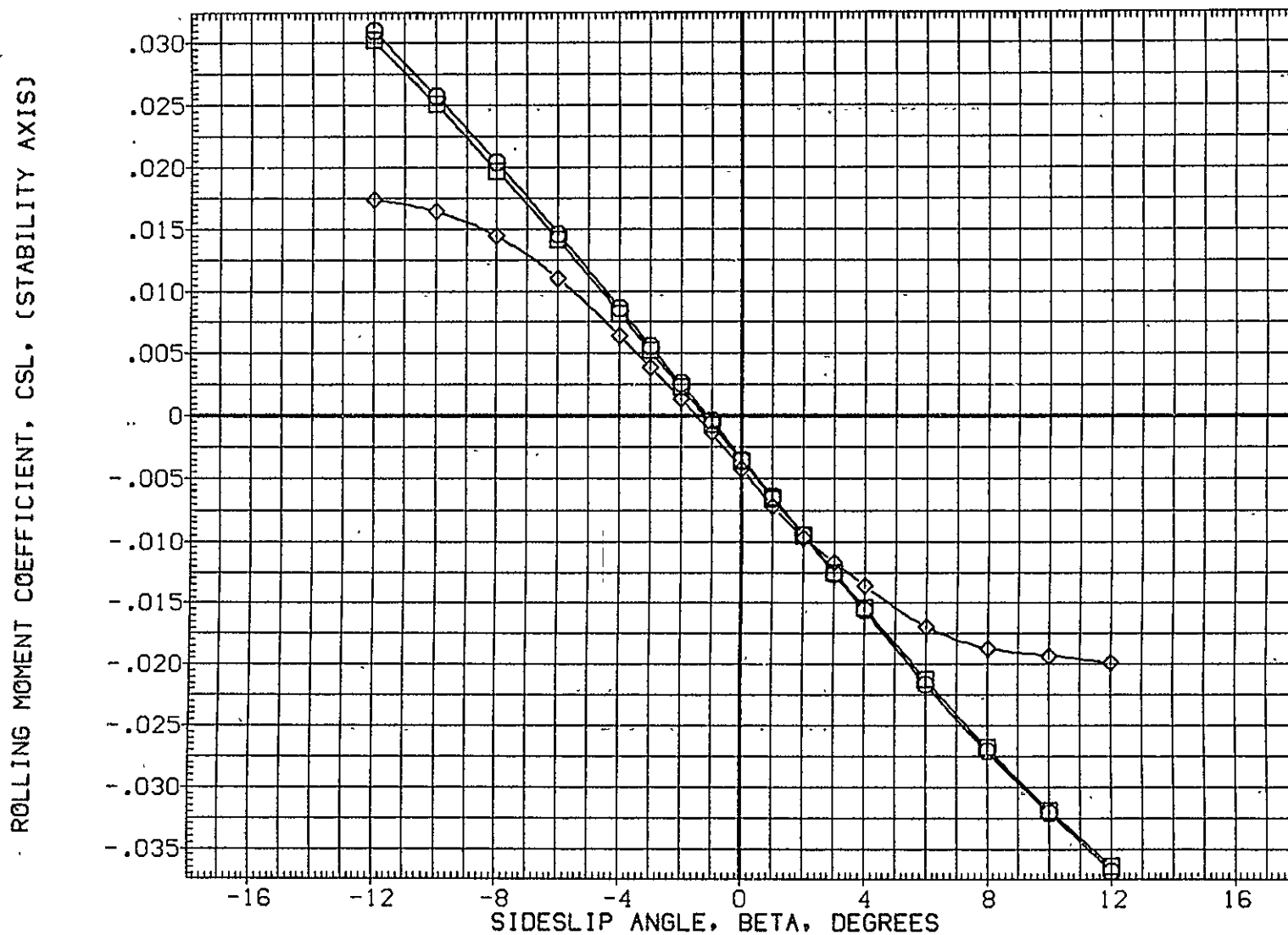


FIG.105 747 ALONE, VERTICAL TAIL OFF, FLAPS 20, ALPHA1= 6 DEG (S=+1)

BTWT-1431CA5 K1 F20 H15.1A V9.1

(RGMD57)

SYMBOL	MACH	PARAMETRIC VALUES	REFERENCE INFORMATION
○	.300	ALPHA1 6.000 STAB 1.000	SREF 5500.0000 SQ.FT.
□	.500	RUD-U .000 RUD-L .000	LREF 327.8000 IN.
◇	.600	ELV-1B .000 ELV-09 3.000	BREF 2348.0000 IN.
△	.700	S1-2 .000 S3-4 .000	XMRP 1339.9100 IN. XC
			YMRP .0000 IN. YC
			ZMRP 190.7500 IN. ZC
			SCALE .0300

SIDE FORCE COEFFICIENT, CY

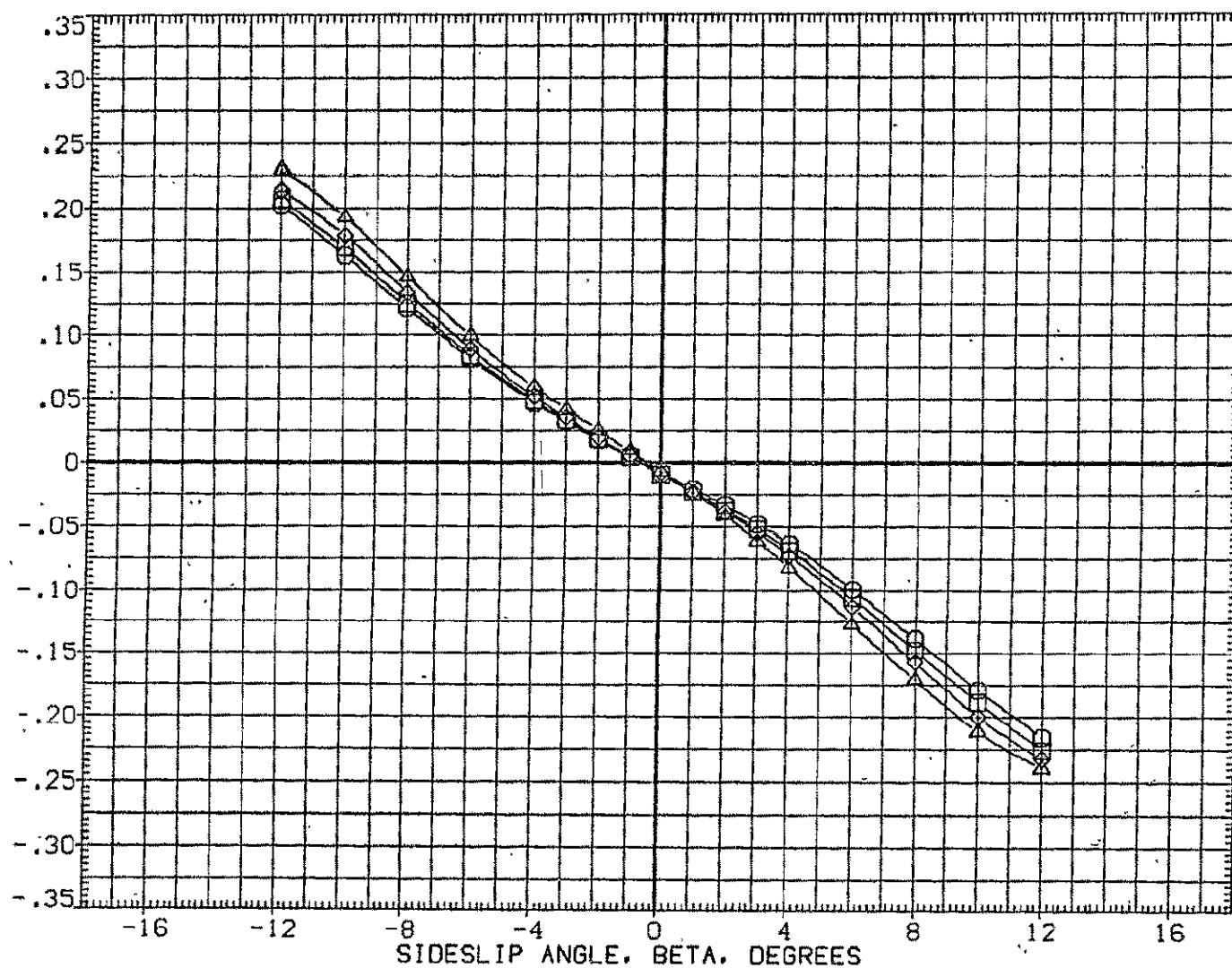


FIG.106 747 ALONE, BASIC AIRPLANE, FLAPS 20, ALPHA1= 6 DEG (S=+1)

SYMBOL	MACH	PARAMETRIC VALUES
○	.300	ALPHA1 6.000 STAB 1.000
□	.500	RUD-U .000 RUD-L .000
◇	.600	ELV-1B .000 ELV-0B 3.000
△	.700	S1-2 .000 S3-4 .000
		S5-6 .000

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

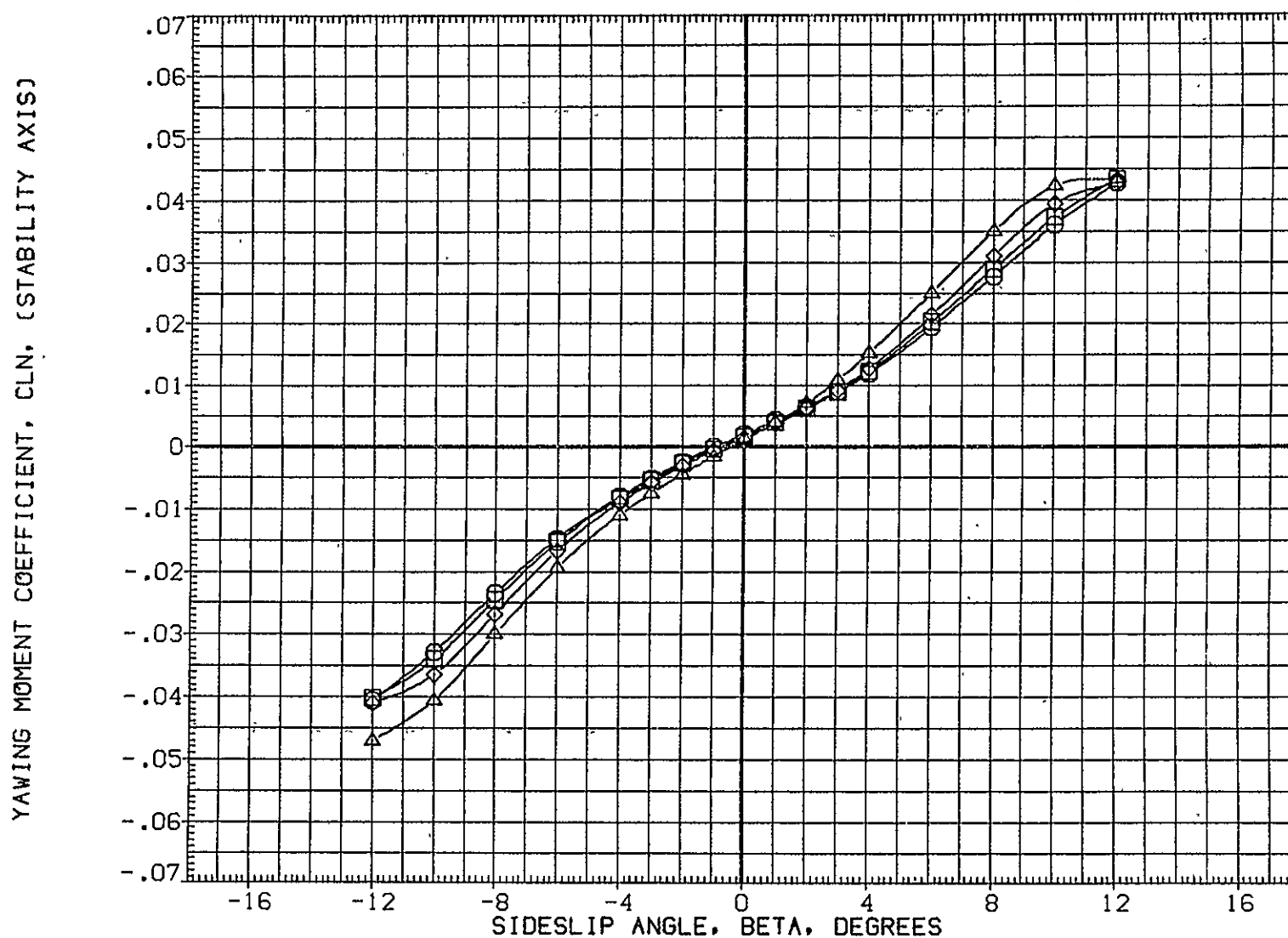


FIG.106 747 ALONE, BASIC AIRPLANE, FLAPS 20, ALPHA1= 6 DEG (S=+1)

BTWT-1431CA5 K1 F20 H15.1A V9.1

(RGM057)

SYMBOL	MACH	PARAMETRIC VALUES
○	.300	ALPHA1 6.000 STAB 1.000
□	.500	RUD-U .000 RUD-L .000
◇	.600	ELV-1B .000 ELV-OB 3.000
△	.700	S1-2 .000 S3-4 .000
		S5-6 .000

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

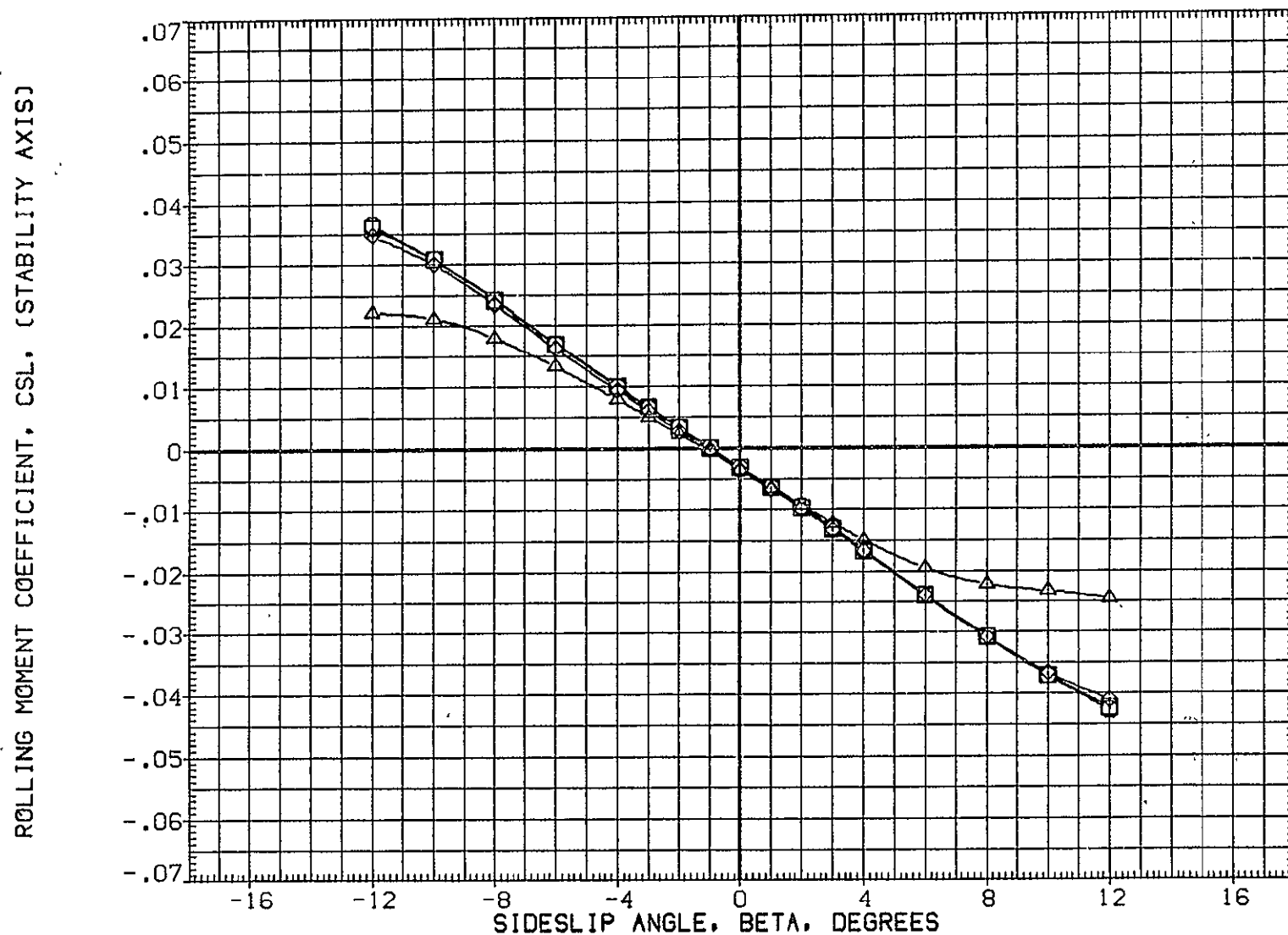


FIG.106 747 ALONE, BASIC AIRPLANE, FLAPS 20, ALPHA1= 6 DEG (S=+1)

SYMBOL

○
□
◇

MACH

.500
.600
.700ALPHA1
RUD-U
ELV-1B
S1-2
S5-6

PARAMETRIC VALUES

6.000
.000
.000
.000
.000STAB
RUD-L
ELV-0B
S3-41.000
.000
3.000
.000

REFERENCE INFORMATION

SREF	5500.0000	SQ.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XM RP	1339.9100	IN. XC
YM RP	.0000	IN. YC
ZM RP	190.7500	IN. ZC
SCALE	.0300	

SIDE FORCE COEFFICIENT, CY

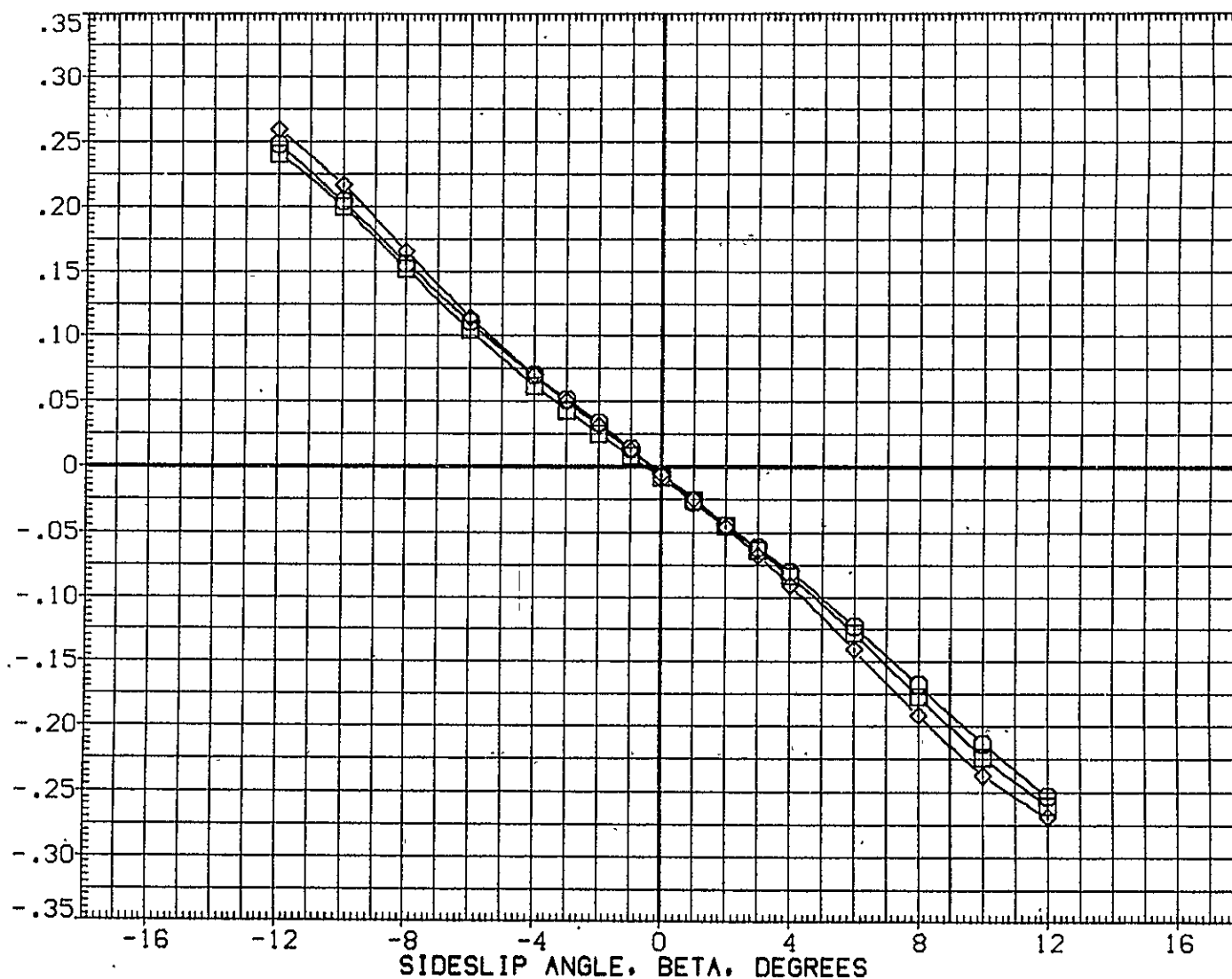


FIG.107 747 ALONE+ TIP FINS, FLAPS 20, ALPHA1= 6 DEG (S=+1)

BTWT-1431CA5 K1 F20 H15.6 V9.1

(RGM060)

SYMBOL	MACH	PARAMETRIC VALUES			
○	.500	ALPHA1	6.000	STAB	1.000
□	.600	RUD-U	.000	RUD-L	.000
◇	.700	ELV-1B	.000	ELV-0B	3.000
		S1-2	.000	S3-4	.000
		S5-6	.000		

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

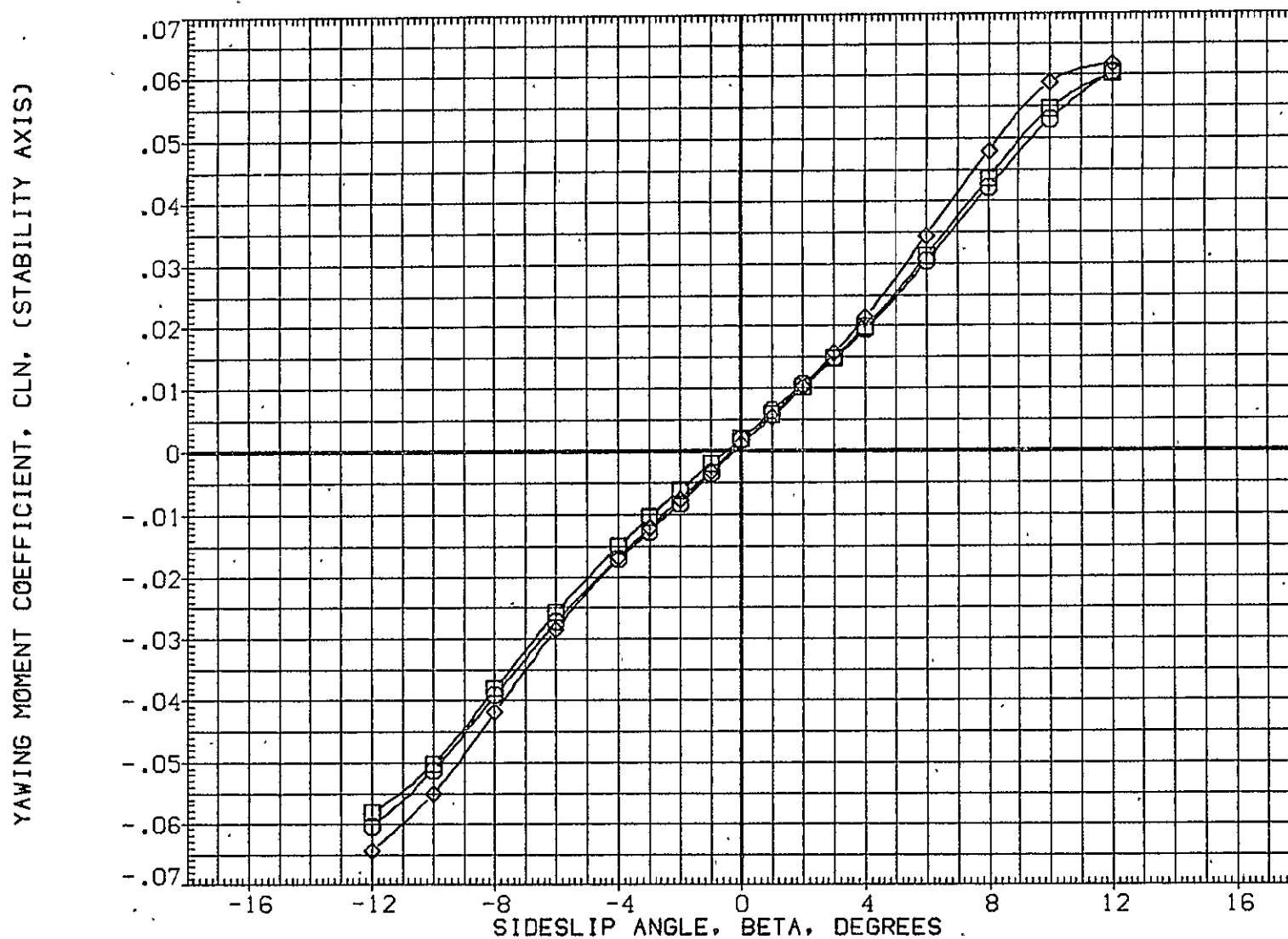


FIG.107 747 ALONE+ TIP FINS, FLAPS 20, ALPHA1= 6 DEG (S=+1)

SYMBOL	MACH	PARAMETRIC VALUES
○	.500	ALPHA1 6.000 STAB 1.000
□	.600	RUD-U .000 RUD-L .000
◇	.700	ELV-1B .000 ELV-0B 3.000
		S1-2 .000 S3-4 .000
		S5-6 .000

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	.190.7500	IN. ZC
SCALE	.0300	

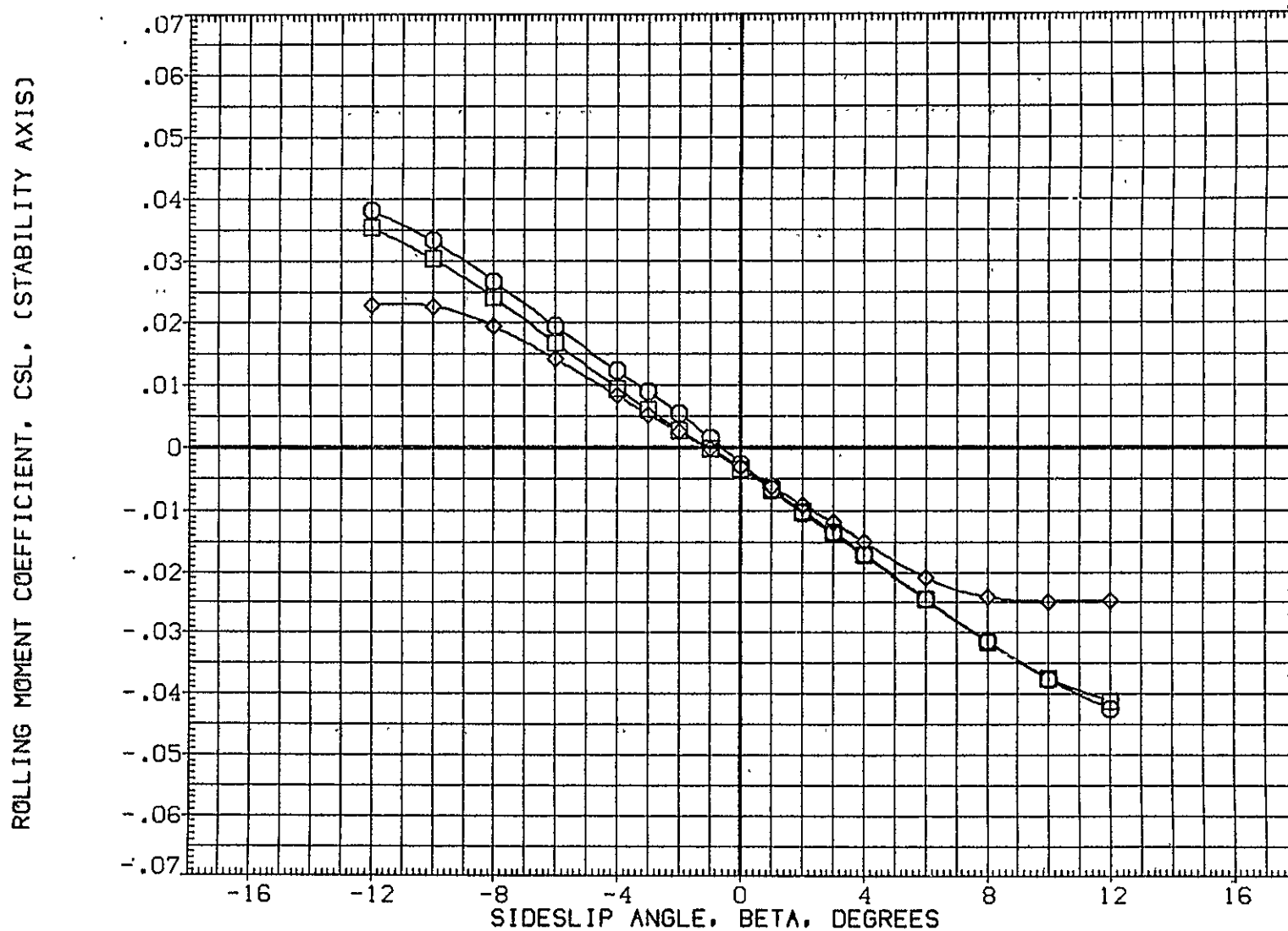


FIG.107 747 ALONE+ TIP FINS, FLAPS 20, ALPHA1= 6 DEG (S=+1)

CA5 K1 F20 H15.6 V9.1 (PLUS. 0RB TC5 AT38.1)(RGM067)

SYMBOL	MACH	PARAMETRIC VALUES				REFERENCE INFORMATION		
		ALPHA I	6.000	STAB	1.000	SREF	5500.0000	SQ.FT.
○	.500	RUD-U	.000	RUD-L	.000	LREF	327.8000	IN.
□	.600	ELV-1B	.000	ELV-0B	3.000	BREF	2348.0000	IN.
◇	.700	S1-2	45.000	S3-4	45.000	XMRP	1339.9100	IN. XC
		S5-6	45.000	I0RB	9.700	YMRP	.0000	IN. YC
						ZMRP	190.7500	IN. ZC
						SCALE	.0300	

SIDE FORCE COEFFICIENT, CY

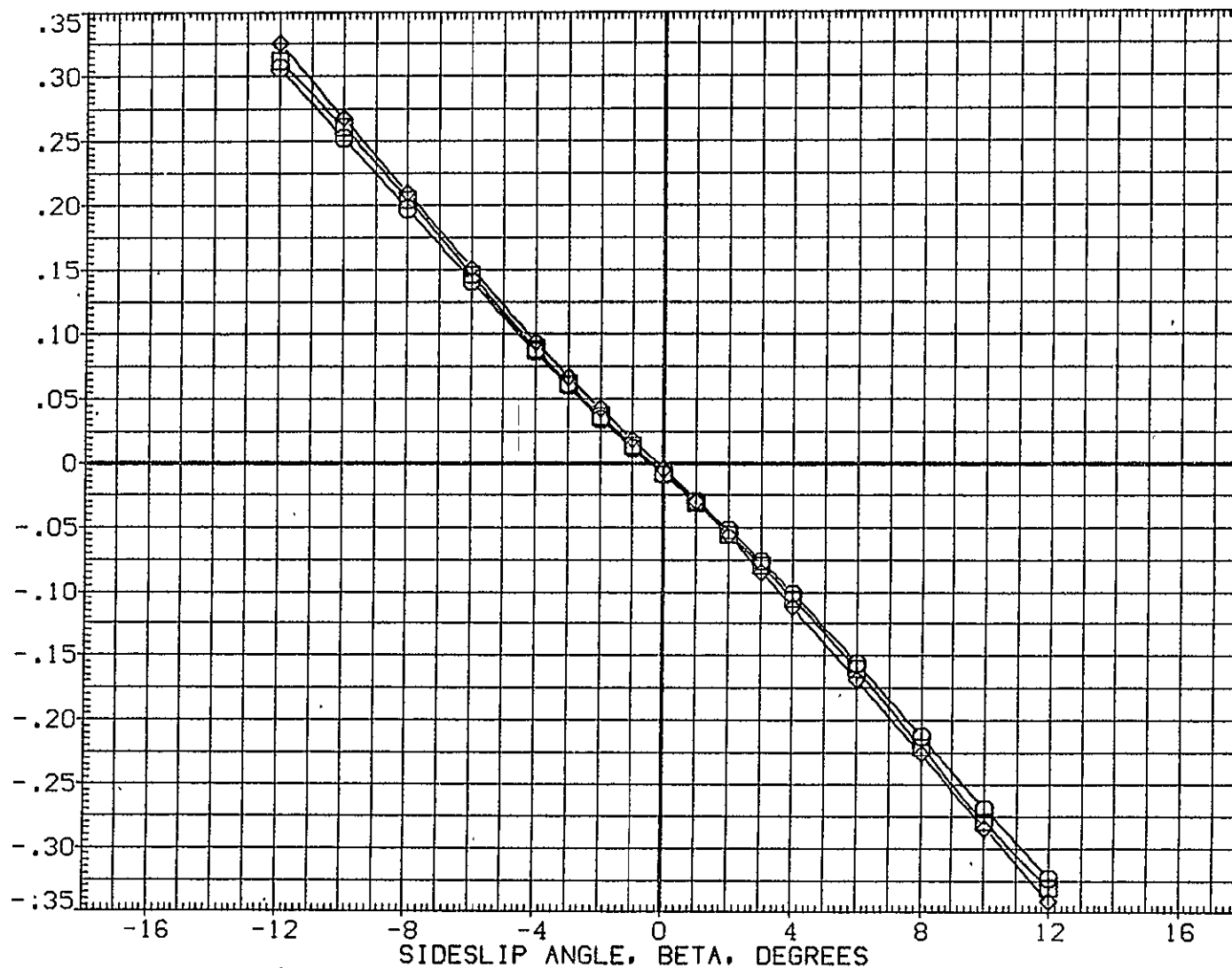


FIG.108 747+0RB(10 DEG)+TIP FINS+SP45,FLAPS 20 LAUNCH,BASELINE,ALPHA I= 6 TOTAL

SYMBOL	MACH	PARAMETRIC VALUES
○	.500	ALPHA I 6.000 STAB 1.000
□	.600	RUD-U .000 RUD-L .000
◇	.700	ELV-IB .000 ELV-OB 3.000
		S1-2 45.000 S3-4 45.000
		S5-6 45.000 TORB 9.700

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

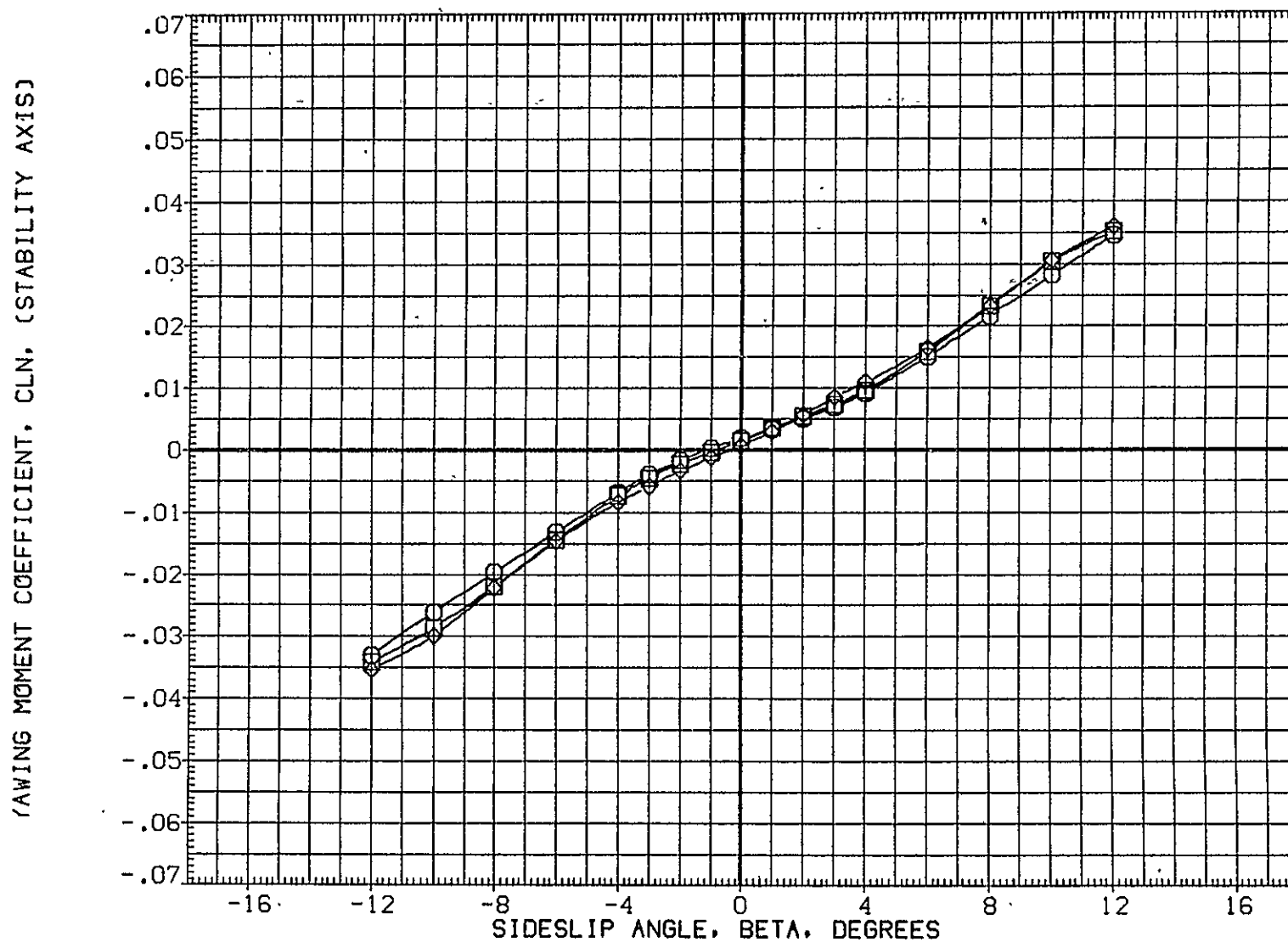


FIG.108 747+ORB(10 DEG)+TIP FINS+SP45,FLAPS 20 LAUNCH,BASELINE,ALPHA I= 6 TOTAL

CA5 K1 F20 H15.6 V9.1 (PLUS. ORB TC5 AT38.1)(RGM067)

SYMBOL
○
□
◇

MACH

.500
.600
.700
S1-2
S5-6

PARAMETRIC VALUES

ALPHA1 6.000 STAB 1.000
RUD-U .000 RUD-L' .000
ELV-18 .000 ELV-08 3.000
S3-4 45.000
10RB 9.700

REFERENCE INFORMATION

SREF 5500.0000 SQ.FT.
LREF 327.8000 IN.
BREF 2348.0000 IN.
XMRP 1339.9100 IN. XC
YMRP .0000 IN. YC
ZMRP 190.7500 IN. ZC
SCALE .0300

ROLLING MOMENT COEFFICIENT, CSL, (STABILITY AXIS)

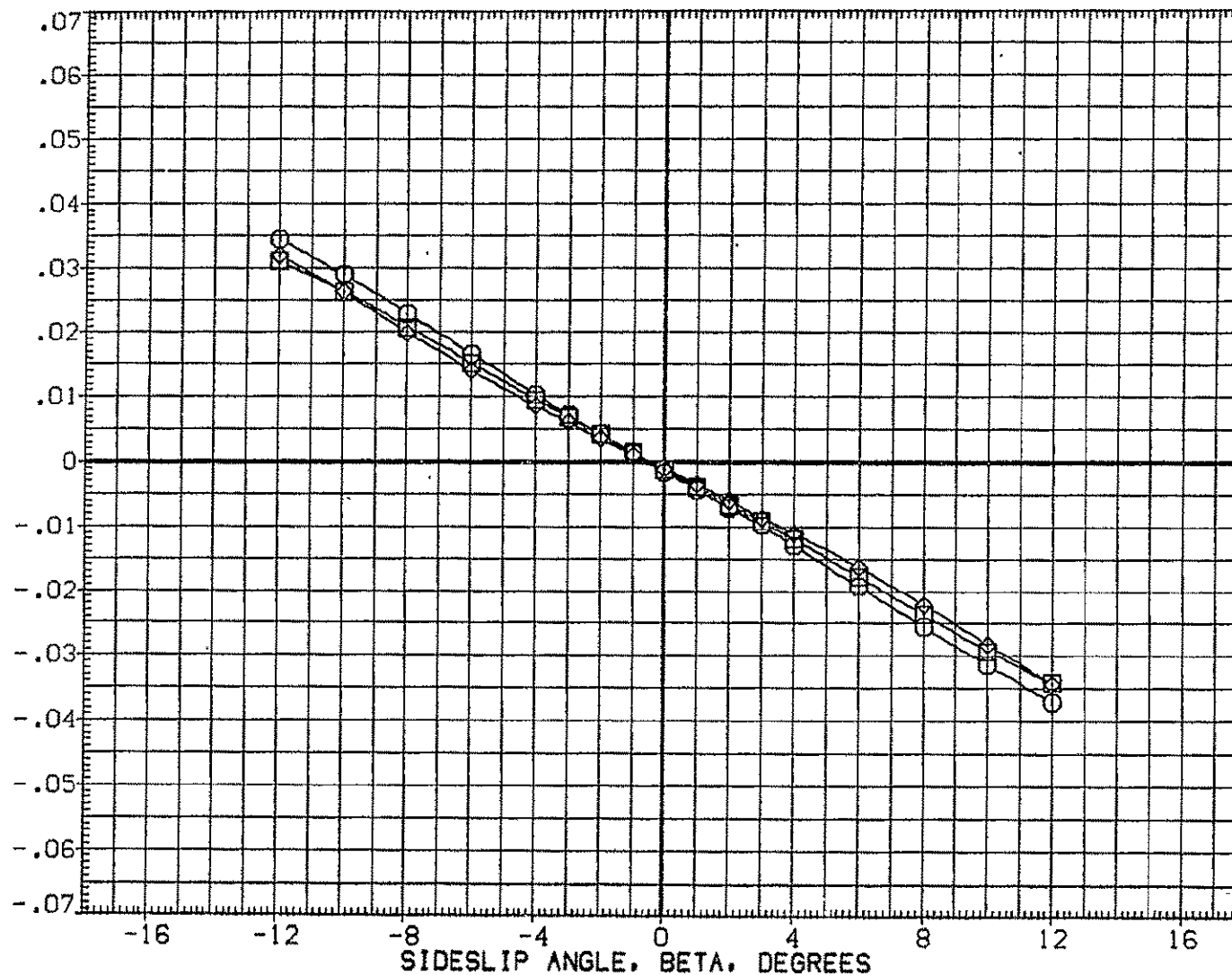


FIG.108 747+ORB(10 DEG)+TIP FINS+SP45,FLAPS 20 LAUNCH,BASELINE,ALPHA1= 6 TOTAL

SYMBOL

○
□
◇

MACH

.500
.600
.700ALPHA I
RUD-U
ELV-1B
S1-2
S5-6

PARAMETRIC VALUES

6.000 STAB 1.000
.000 RUD-L .000
.000 ELV-OB 3.000
45.000 S3-4 45.000
45.000 10RB 9.700

REFERENCE INFORMATION

SREF	5500.0000	SQ.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

INCREMENTAL SIDE FORCE COEFFICIENT(STABILITY AXIS), DCY

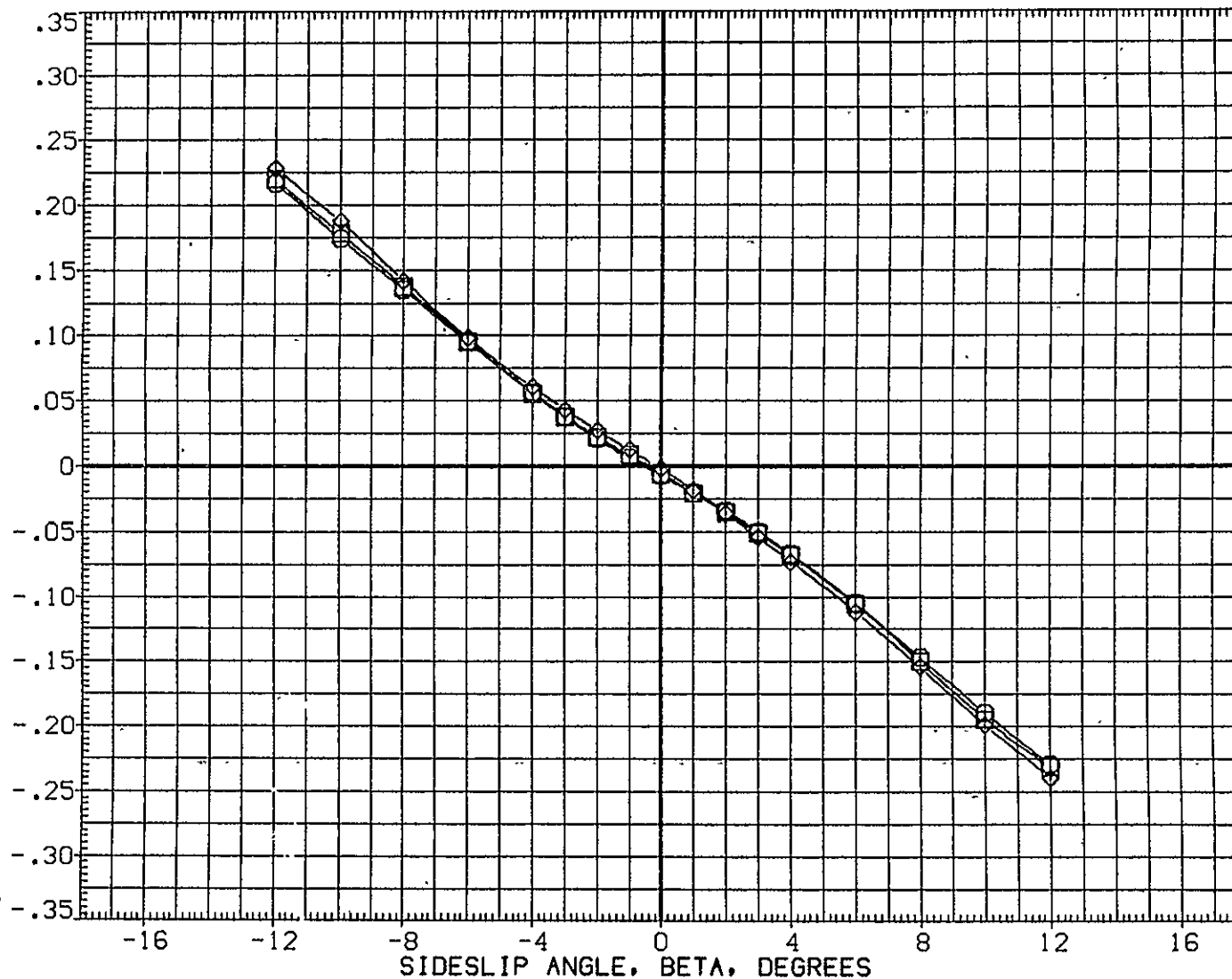


FIG.109 747+ORB(10 DEG)+TIP FINS+SP45, FLAPS 20. LAUNCH, BASELINE, ALPHA I= 6 747

CA5 K1 F20 H15.6 V9.1 MINUS ORB TC5 AT38.1 (BGM067)

SYMBOL
○
□
◇

MACH

.500
.600
.700

ALPHA I
RUD-U
ELV-1B
S1-2
S5-6

PARAMETRIC VALUES

6.000 STAB 1.000
.000 RUD-L .000
.000 ELV-OB 3.000
45.000 S3-4 45.000
45.000 IORB 9.700

REFERENCE INFORMATION

SREF 5500.0000 SQ.FT.
LREF 327.8000 IN.
BREF 2348.0000 IN.
XMRP 1339.9100 IN. XC
YMRP .0000 IN. YC
ZMRP 190.7500 IN. ZC
SCALE .0300

INCREMENTAL YAWING MOMENT COEFFICIENT(STABILITY AXIS), DCLN

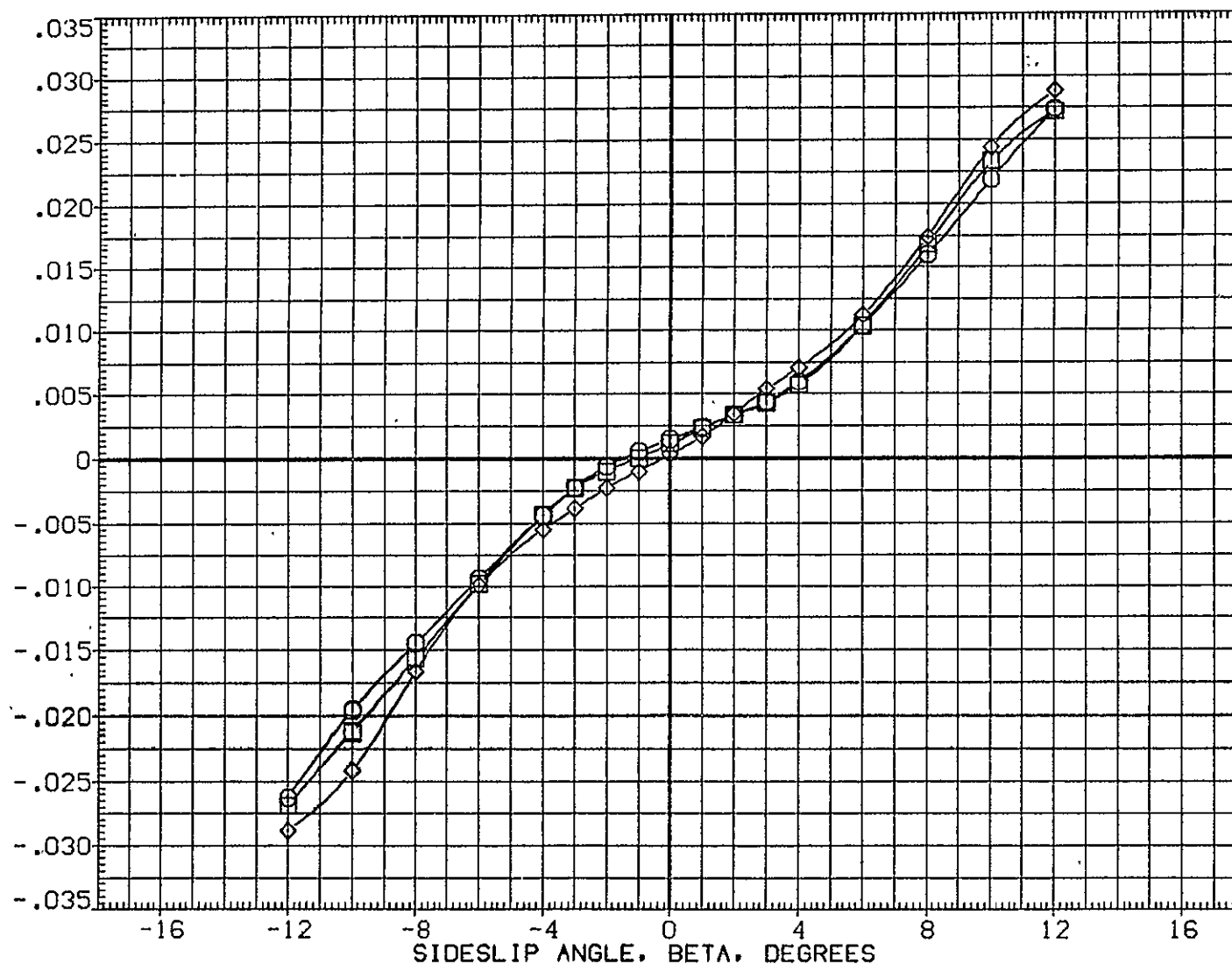


FIG.109 747+ORB(10 DEG)+TIP FINS+SP45,FLAPS 20 LAUNCH,BASELINE,ALPHA I= 6 747

SYMBOL		MACH		PARAMETRIC VALUES				REFERENCE INFORMATION			
○		.500	ALPHA1	6.000	STAB	1.000		SREF	5500.0000	SQ.FT.	
□		.600	RUD-U	.000	RUD-L	.000		LREF	327.8000	IN.	
◇		.700	ELV-1B	.000	ELV-0B	3.000		BREF	2348.0000	IN.	
			S1-2	45.000	S3-4	45.000		XMRP	1339.9100	IN. XC	
			S5-6	45.000	ICRB	9.700		YMRP	.0000	IN. YC	
								ZMRP	190.7500	IN. ZC	
								SCALE	.0300	.	

INCREMENTAL ROLLING MOMENT COEFFICIENT(STABILITY AXIS), DCSL

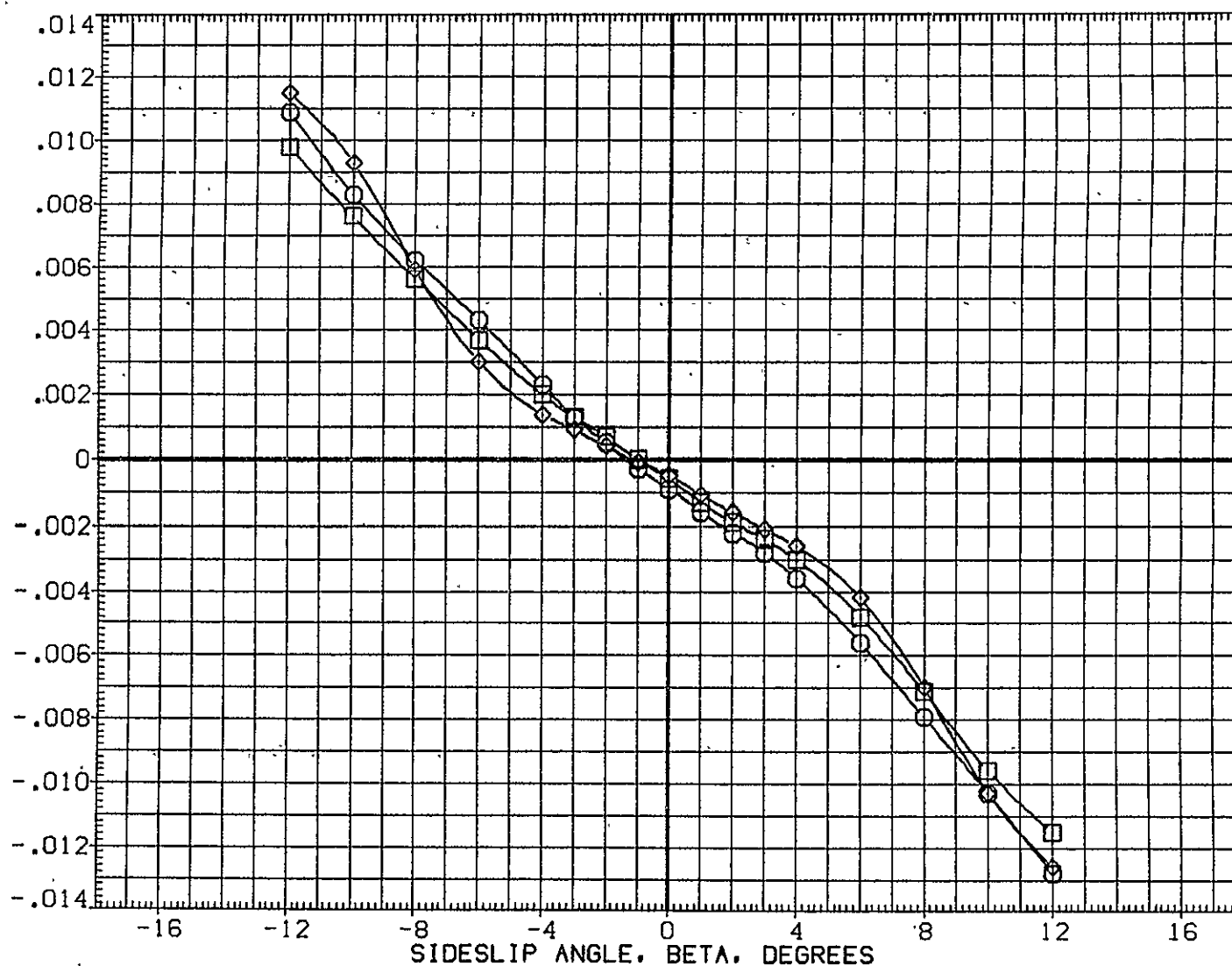


FIG.109 747+ORB(10 DEG)+TIP FINS+SP45,FLAPS 20 LAUNCH,BASELINE,ALPHA1= 6 747

CA5 ORB TC5 AT38.1 (PRES. K1 F20 H15.6 V9.1)(XGM067)

SYMBOL	MACH	PARAMETRIC VALUES	REFERENCE INFORMATION
○	.499	ALPHA I 6.000 STAB 1.000	SREF 2690.0000 SQ.FT.
□	.600	RUD-U .000 RUD-L .000	LREF 474.8100 IN.
◇	.700	ELV-1B .000 ELV-OB 3.000	BREF 936.6800 IN.
		S1-2 45.000 S3-4 45.000	XMRP 1109.0000 IN. X0
		S5-6 45.000 IORB 9.700	YMRP .0000 IN. Y0
			ZMRP 375.0000 IN. Z0
			SCALE .0300

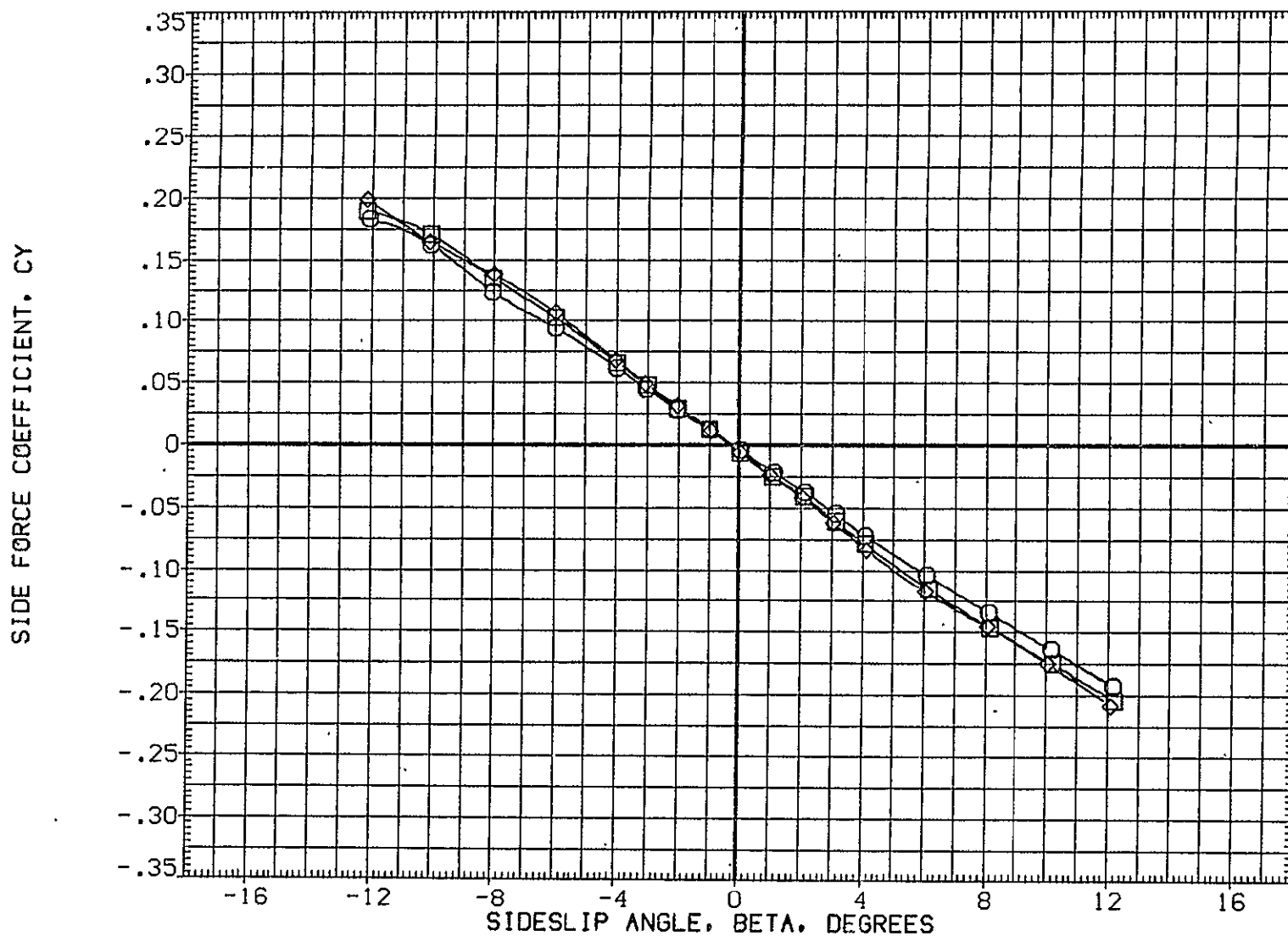


FIG.110 747+ORB(10 DEG)+TIP FINS+SP45,FLAPS 20 LAUNCH,BASELINE,ALPHA I= 6 ORB

SYMBOL	MACH	PARAMETRIC VALUES	REFERENCE INFORMATION
○	.499	ALPHA1 6.000 STAB 1.000	SREF 2690.0000 SQ.FT.
□	.600	RUD-U .000 RUD-L .000	LREF 474.8100 IN.
◇	.700	ELV-1B .000 ELV-0B 3.000	BREF 936.6800 IN.
		S1-2 45.000 S3-4 45.000	XMRP 1109.0000 IN. X0
		S5-6 45.000 10RB 9.700	YMRP .0000 IN. Y0
			ZMRP 375.0000 IN. Z0
			SCALE .0300

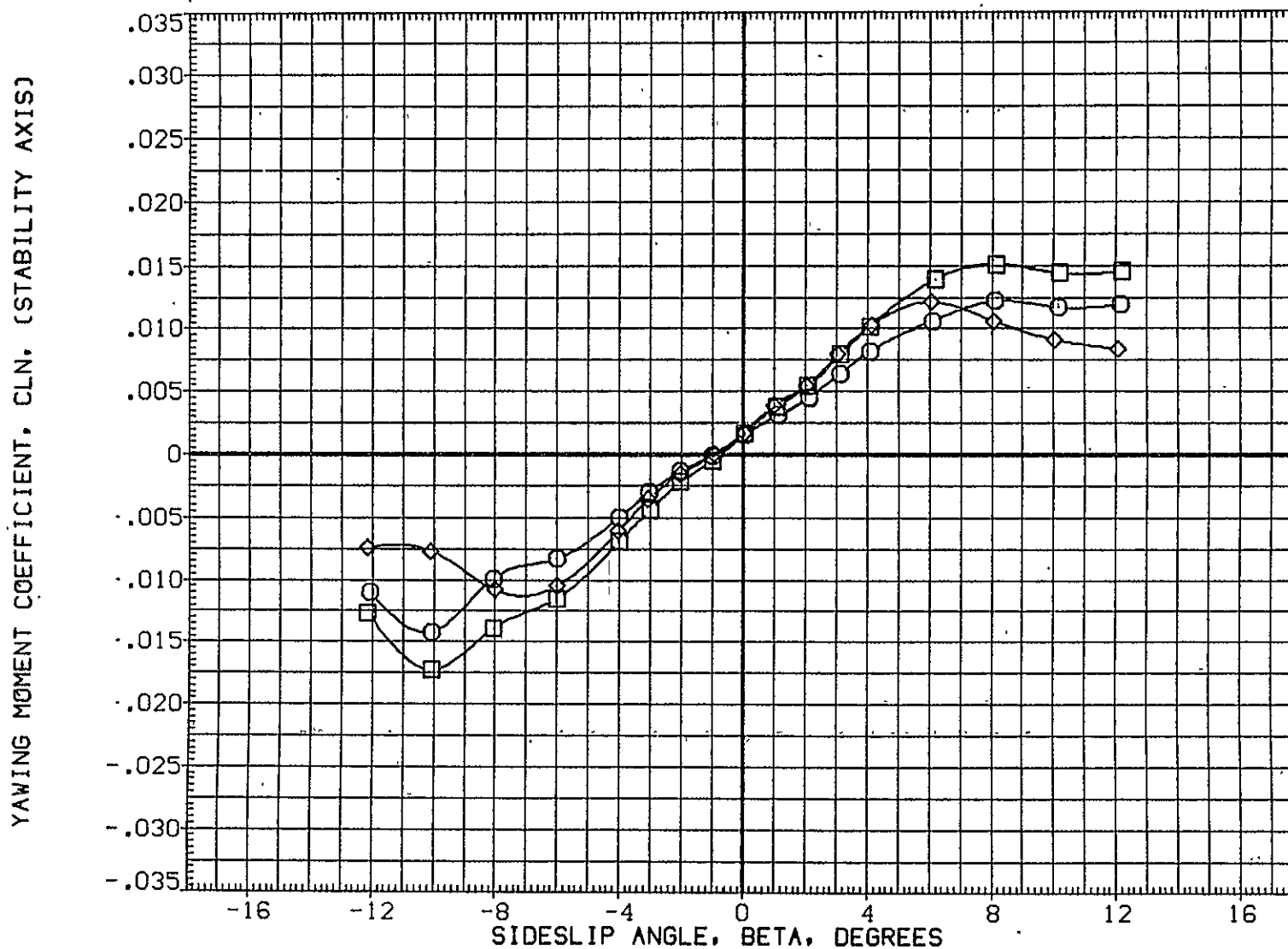


FIG.110 747+0RB(10 DEG)+TIP FINS+SP45,FLAPS 20 LAUNCH,BASELINE,ALPHA1= 6 0RB

CA5 0RB TC5 AT38.1 (PRES. K1 F20 H15.6 V9.1)(XGMO67)

SYMBOL	MACH	PARAMETRIC VALUES	REFERENCE INFORMATION
○	.499	ALPHA I 6.000 STAB 1.000	SREF 2690.0000 SQ.FT.
□	.600	RUD-U .000 RUD-L .000	LREF 474.8100 IN.
◇	.700	ELV-IB .000 ELV-OB 3.000	BREF 936.6800 IN.
		S1-2 45.000 S3-4 45.000	XMRP 1109.0000 IN. X0
		S5-6 45.000 TORB 9.700	YMRP .0000 IN. Y0
			ZMRP 375.0000 IN. Z0
			SCALE .0300

ROLLING MOMENT COEFFICIENT, CSL. (STABILITY AXIS)

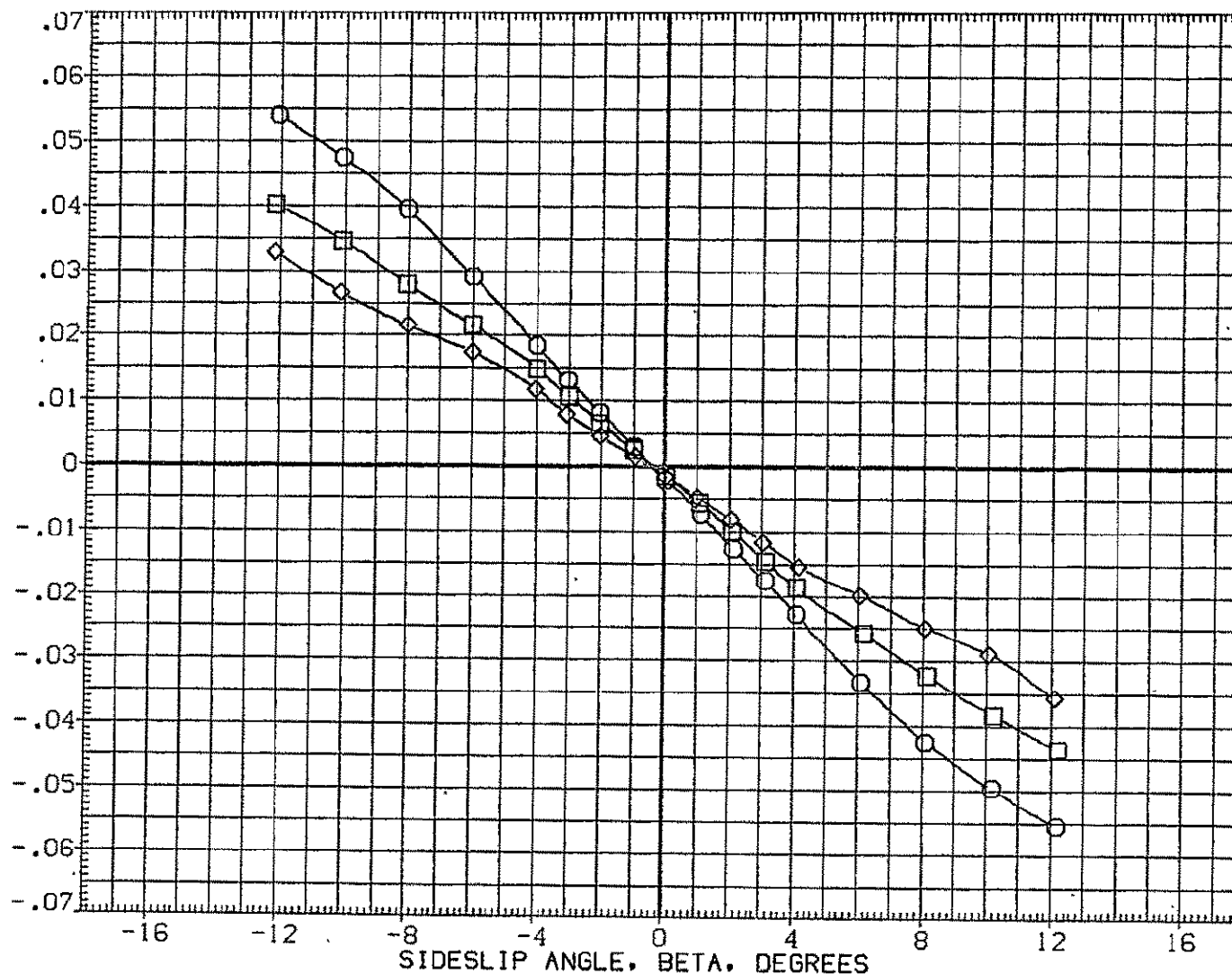


FIG.110 747+0RB(10 DEG)+TIP FINS+SP45,FLAPS 20 LAUNCH,BASELINE,ALPHA I= 6 0RB

SYMBOL

○
□
◇

MACH

.500
.600
.700ALPHA1
RUD-U
ELV-1B
S1-2
SS-6

PARAMETRIC VALUES

6.000 STAB 1.000
10.000 RUD-L 10.000
.000 ELV-0B 3.000
45.000 S3-4 45.000
45.000 10RB 9.700

REFERENCE INFORMATION

SREF	5500.0000	SQ.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

SIDE FORCE COEFFICIENT, CY



FIG.111 747+0RB(10 DEG)+TIP FINS+SP45,FLAPS 20 LNCH,ALPHA1=6,RUDDER=10/10 TOTAL

CA5 K1-F20 H15.6 V9.1 (PLUS. ORB TC5 AT38.1)(RGM069)

SYMBOL	MACH	PARAMETRIC VALUES				REFERENCE INFORMATION		
○	.500	ALPHA I	6.000	STAB	1.000	SREF	5500.0000	SQ.FT.
□	.600	RUD-U	10.000	RUD-L	10.000	LREF	327.8000	IN.
◇	.700	ELV-IB	.000	ELV-OB	3.000	BREF	2348.0000	IN.
		S1-2	45.000	S3-4	45.000	XMRP	1339.9100	IN. XC
		S5-6	45.000	10RB	9.700	YMRP	.0000	IN. YC
						ZMRP	190.7500	IN. ZC
						SCALE	.0300	

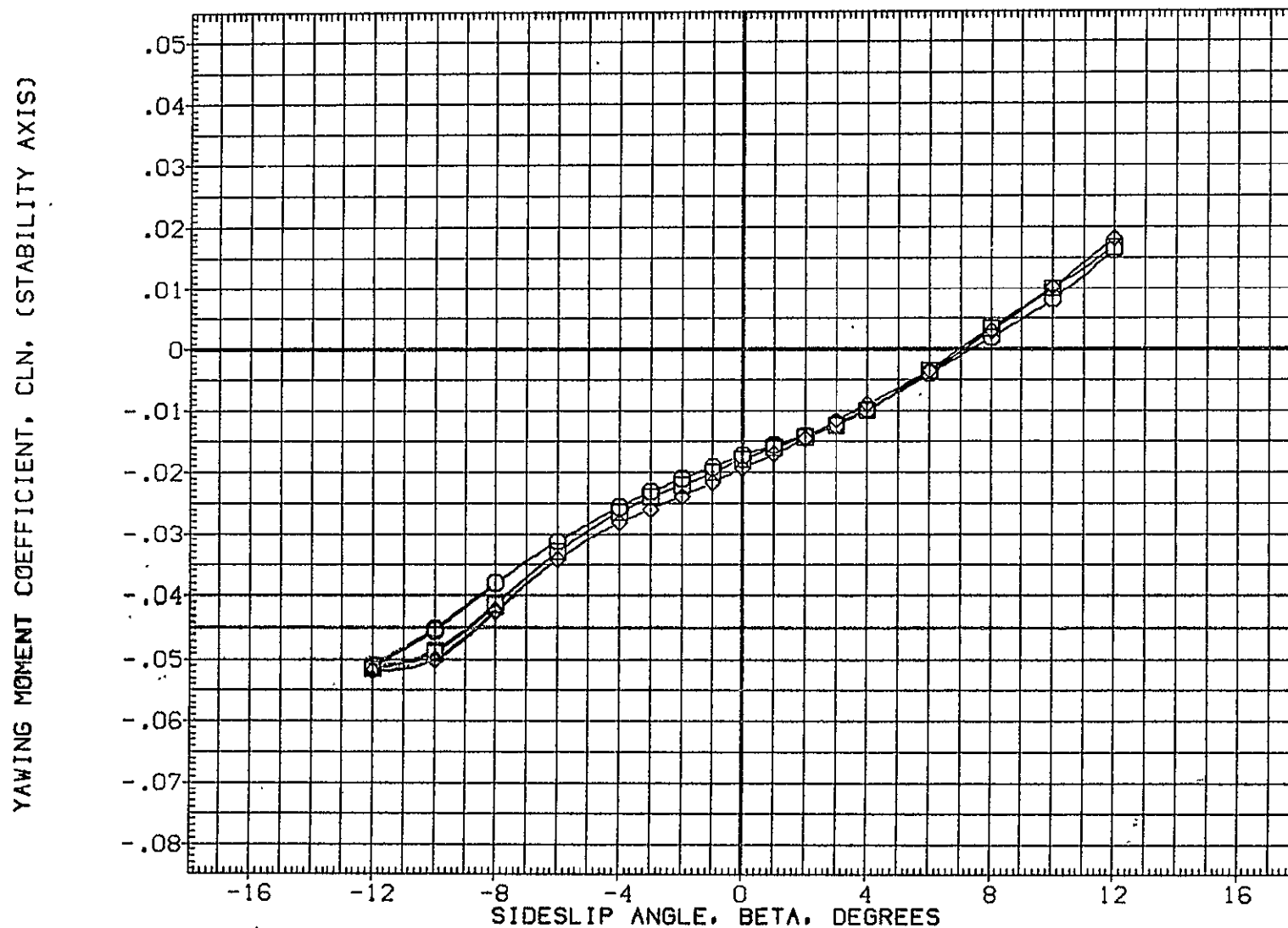


FIG.111 747+ORB(10 DEG)+TIP FINS+SP45,FLAPS 20 LNCH,ALPHA I=6,RUDDER=10/10 TOTAL

SYMBOL	MACH	PARAMETRIC VALUES
○	.500	ALPHA I 6.000 STAB 1.000
□	.600	RUD-U 10.000 RUD-L 10.000
◇	.700	ELV-IB .000 ELV-OB 3.000
		S1-2 45.000 S3-4 45.000
		S5-6 45.000 10RB 9.700

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

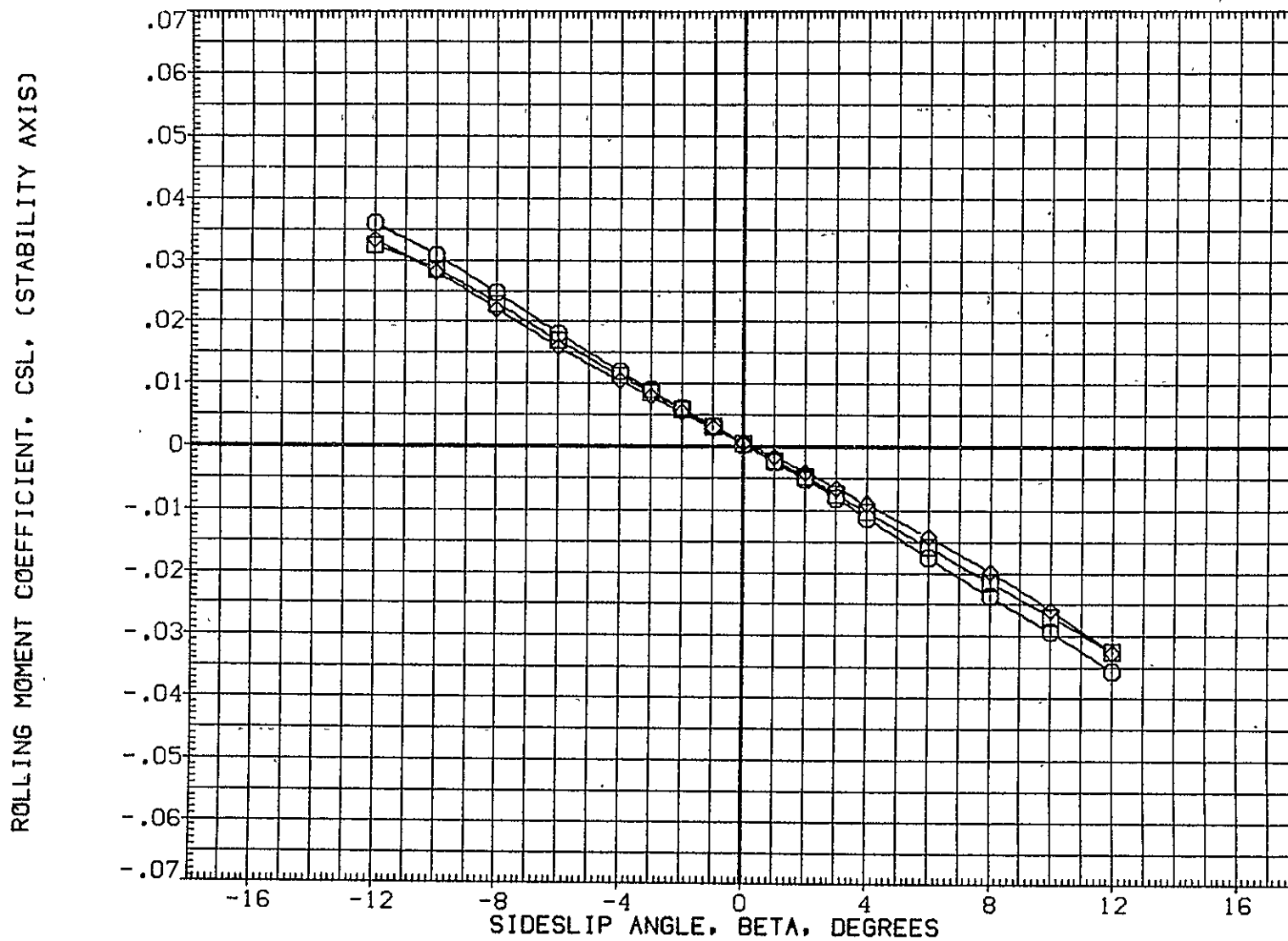


FIG.111 747+0RB(10 DEG)+TIP FINS+SP45,FLAPS 20 LNCH,ALPHA I=6, RUDDER=10/10 TOTAL

CA5 K1 F20 H15.6 V9.1 MINUS ORB TC5 AT38.1 (BGM069)

SYMBOL	MACH	PARAMETRIC VALUES	REFERENCE INFORMATION
○	.500	ALPHA1 6.000 STAB 1.000	SREF 5500.0000 SQ.FT.
□	.600	RUD-U 10.000 RUD-L 10.000	LREF 327.8000 IN.
◇	.700	ELV-1B .000 ELV-OB 3.000	BREF 2348.0000 IN.
		S1-2 45.000 S3-4 45.000	XMRP 1339.9100 IN. XC
		S5-6 45.000 IORB 9.700	YMRP .0000 IN. YC
			ZMRP 190.7500 IN. ZC
			SCALE .0300

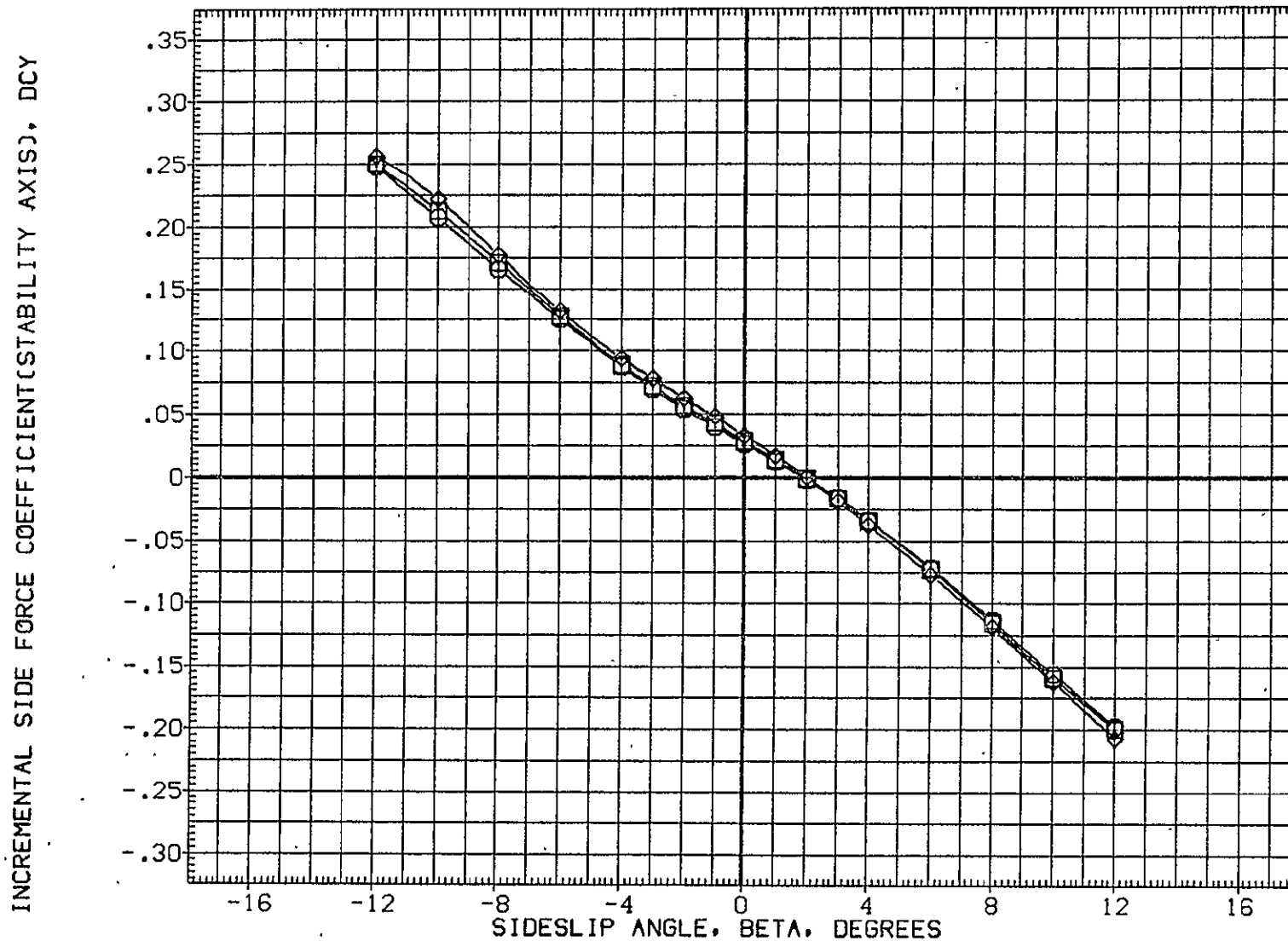


FIG.112 747+ORB(10 DEG)+TIP FINS+SP45,FLAPS 20 LNCH,ALPHA1=6,RUDDER=10/10 747

SYMBOL	MACH	PARAMETRIC VALUES
○	.500	ALPHA1 6.000 STAB 1.000
□	.600	RUD-U 10.000 RUD-L 10.000
◇	.700	ELV-1B .000 ELV-0B 3.000
		S1-2 45.000 S3-4 45.000
		S5-6 45.000 10RB 9.700

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRF	1339.9100	IN. XC
YMRF	.0000	IN. YC
ZMRF	190.7500	IN. ZC
SCALE	.0300	

INCREMENTAL YAWING MOMENT COEFFICIENT(STABILITY AXIS), DCLN

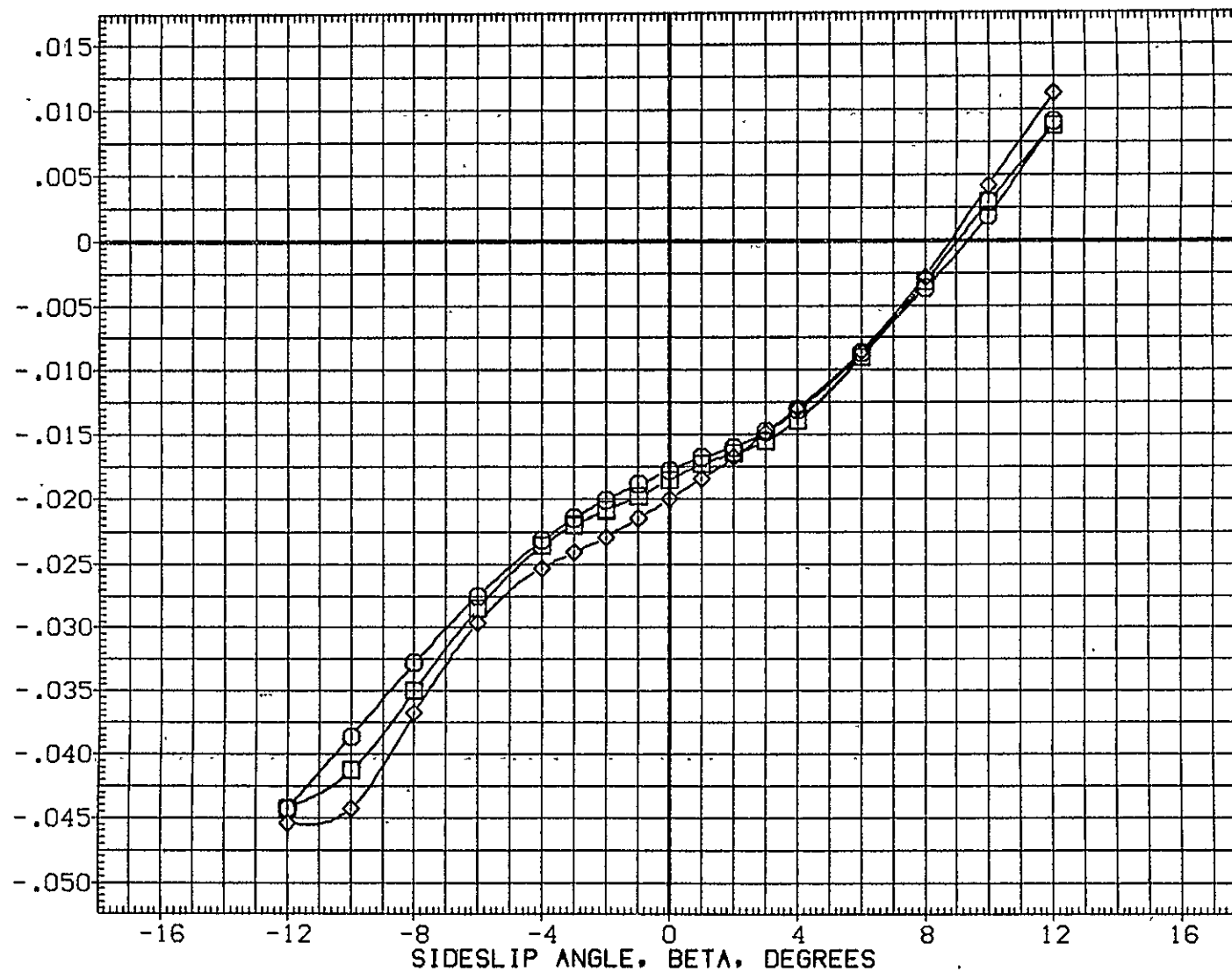


FIG.112 747+0RB(10 DEG)+TIP FINS+SP45,FLAPS 20 LNCH,ALPHA1=6,RUDDER=10/10 747

CAS K1 F20 H15.6 V9.1 MINUS ORB TC5 AT38.1 (BGM069)

SYMBOL	MACH	PARAMETRIC VALUES	REFERENCE INFORMATION
○	.500	ALPHA1 6.000 STAB 1.000	SREF 5500.0000 SQ.FT.
□	.600	RUD-U 10.000 RUD-L 10.000	LREF 327.8000 IN.
◇	.700	ELV-IB .000 ELV-OB 3.000	BREF 2348.0000 IN.
		S1-2 45.000 S3-4 45.000	XMRF 1339.9100 IN. XC
		SS-6 45.000 IORB 9.700	YMRF .0000 IN. YC
			ZMRF 190.7500 IN. ZC
			SCALE .0300

INCREMENTAL ROLLING MOMENT COEFFICIENT(STABILITY AXIS), DCSL

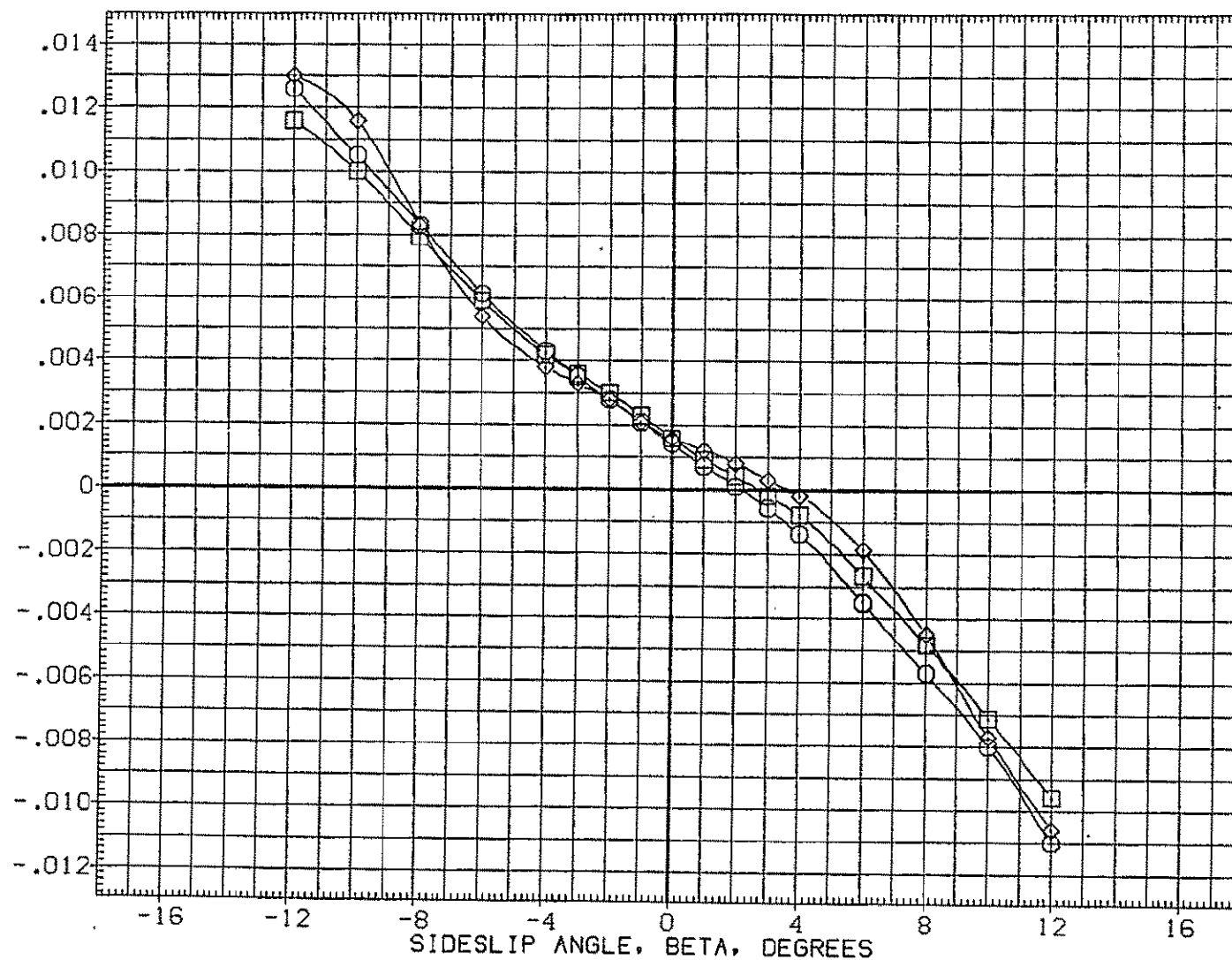


FIG.112 747+ORB(10 DEG)+TIP FINS+SP45,FLAPS 20 LNCH,ALPHA1=6,RUDDER=10/10 747

SYMBOL	MACH	PARAMETRIC VALUES
○	.500	ALPHA1 6.000 STAB 1.000
□	.600	RUD-U 10.000 RUD-L 10.000
◇	.700	ELV-1B .000 ELV-0B 3.000
		S1-2 45.000 S3-4 45.000
		S5-6 45.000 10RB 9.700

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN. X0
YMRP	.0000	IN. Y0
ZMRP	375.0000	IN. Z0
SCALE	.0300	

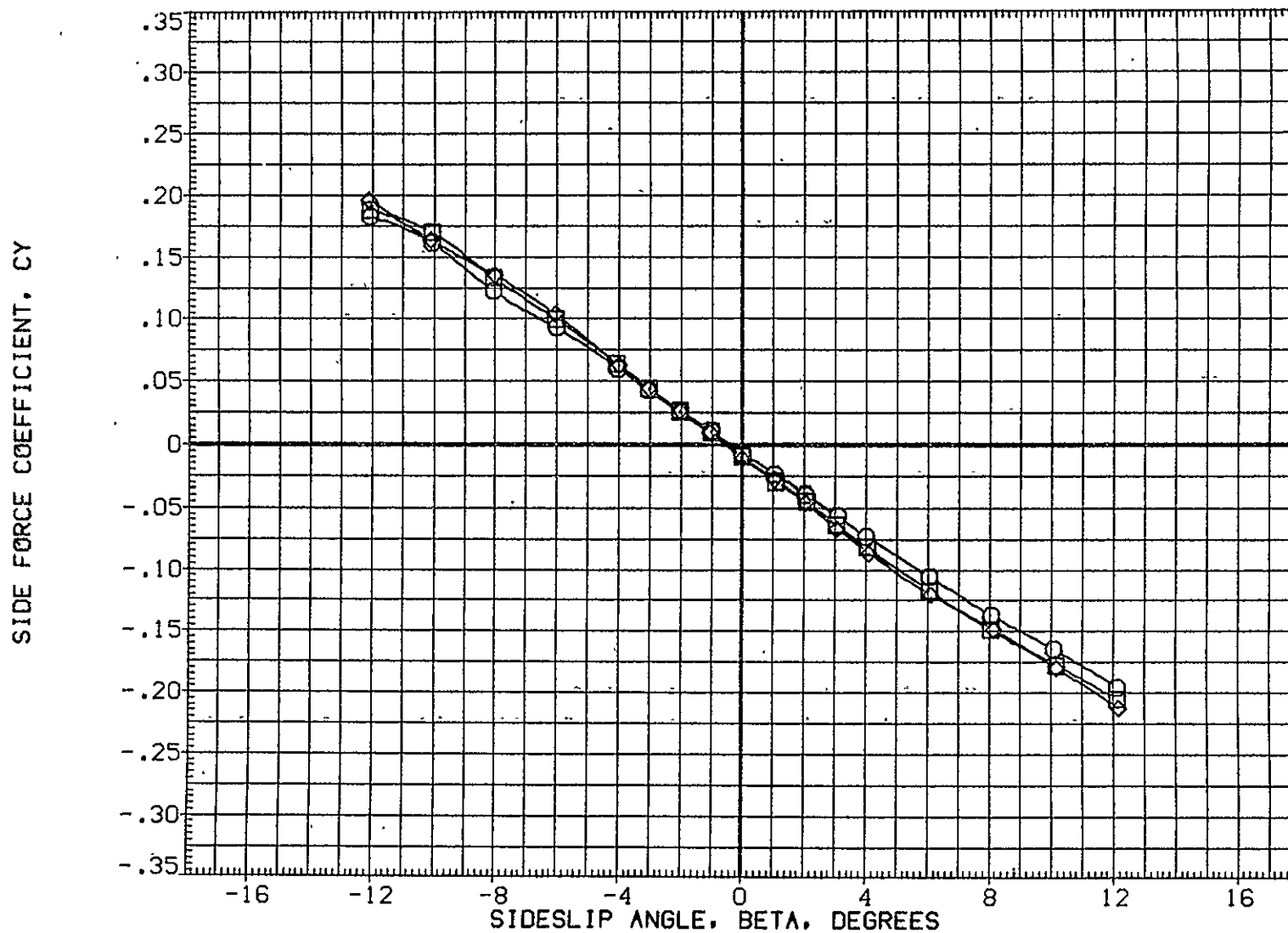


FIG.113 747+0RB(10 DEG)+TIP FINS+SP45,FLAPS 20 LNCH,ALPHA1=6,RUDDER=10/10 0RB

CA5 0RB TC5 AT38.1 (PRES. K1 F20 H15.6 V9.1)(XGM069)

SYMBOL	MACH	PARAMETRIC VALUES				REFERENCE INFORMATION		
○	.500	ALPHA1	6.000	STAB	1.000	SREF	2690.0000	SQ.FT.
□	.600	RUD-U	10.000	RUD-L	10.000	LREF	474.8100	IN.
◇	.700	ELV-1B	.000	ELV-0B	3.000	BREF	936.6800	IN.
		SI-2	45.000	S3-4	45.000	XMRP	1109.0000	IN. X0
		S5-6	45.000	I0RB	9.700	YMRP	.0000	IN. Y0
						ZMRP	375.0000	IN. Z0
						SCALE	.0300	

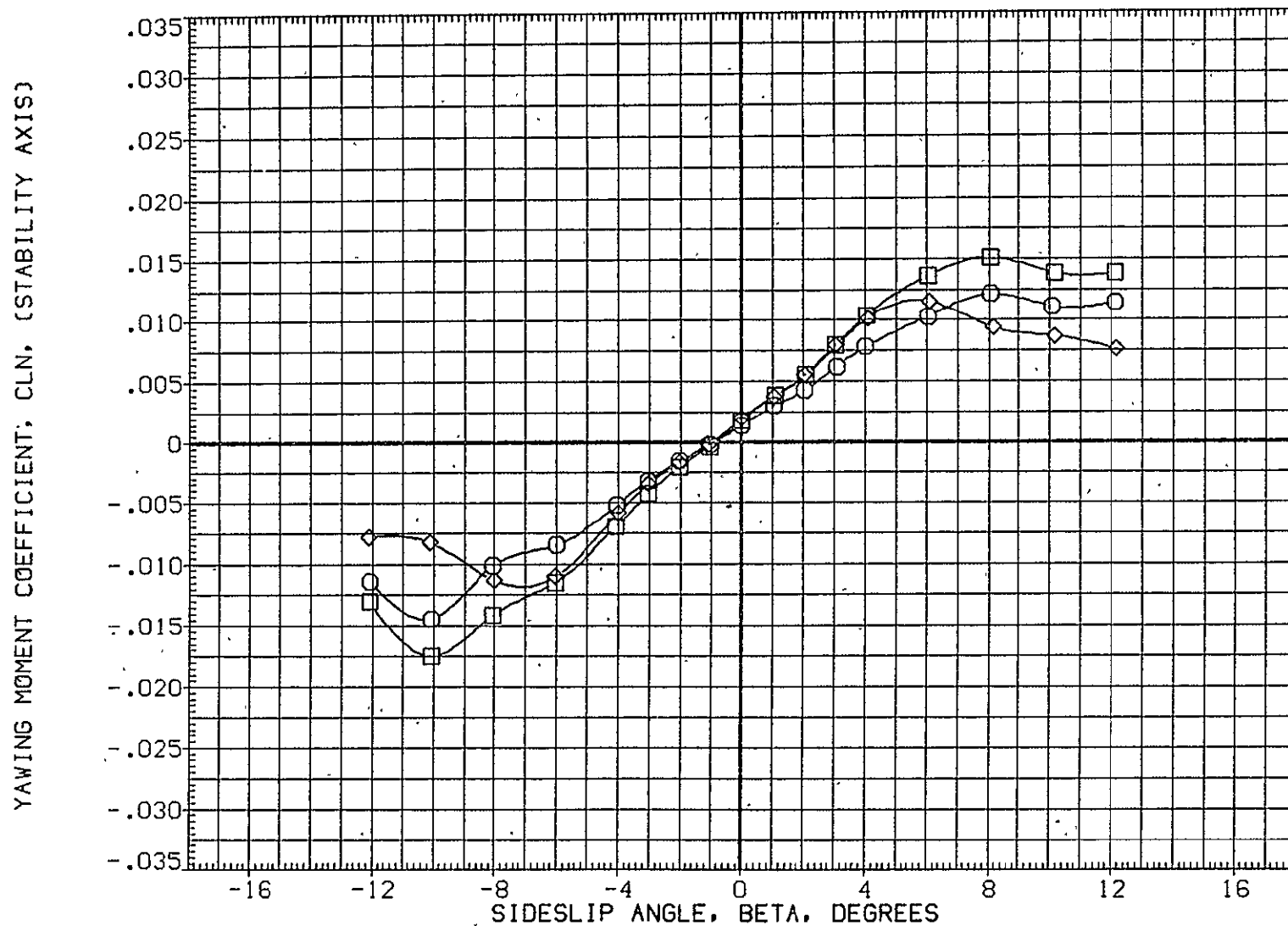


FIG.113 747+0RB(10 DEG)+TIP FINS+SP45,FLAPS 20 LNCH,ALPHA1=6,RUDDER=10/10 0RB

SYMBOL	MACH	PARAMETRIC VALUES	REFERENCE INFORMATION
○	.500	ALPHA1 6.000 STAB 1.000	SREF 2690.0000 SQ.FT.
□	.600	RUD-U 10.000 RUD-L 10.000	LREF 474.8100 IN.
◇	.700	ELV-1B .000 ELV-0B 3.000	BREF 936.6800 IN.
		S1-2 45.000 S3-4 45.000	XMRP 1109.0000 IN. X0
		S5-6 45.000 10RB 9.700	YMRP .0000 IN. Y0
			ZMRP 375.0000 IN. Z0
			SCALE .0300

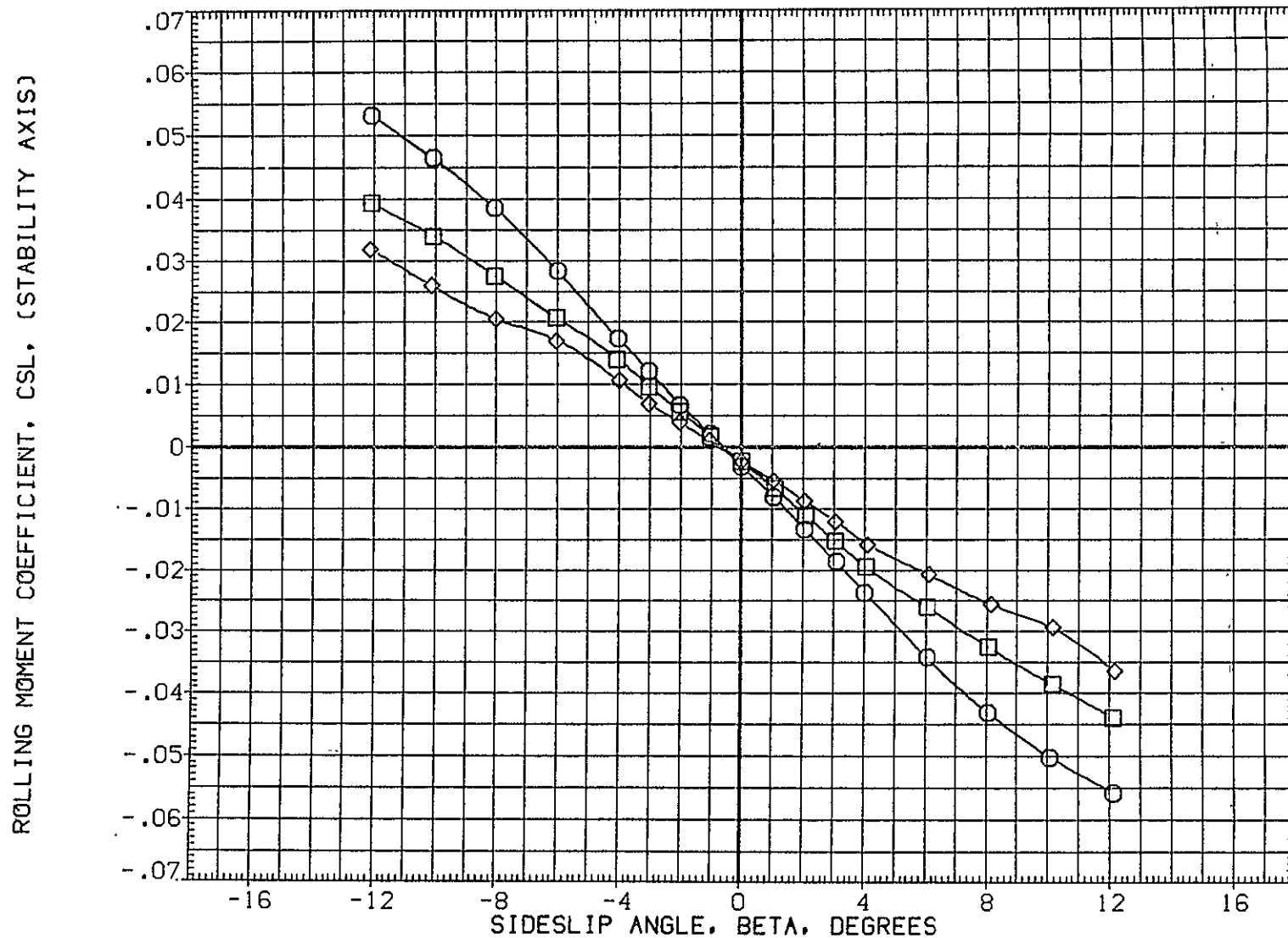


FIG.113 747+0RB(10 DEG)+TIP FINS+SP45,FLAPS 20 LNCH,ALPHA1=6,RUDDER=10/10 0RB

CA5 K1 F20 H15.6 V9.1 (PLUS. ORB TC5 AT38.1)(RGM072)

SYMBOL	MACH	PARAMETRIC VALUES	REFERENCE INFORMATION
○	.500	ALPHA1 8.000 STAB 1.000	SREF 5500.0000 SQ.FT.
□	.600	RUD-U .000 RUD-L .000	LREF 327.8000 IN.
◇	.700	ELV-IB .000 ELV-OB 3.000	BREF 2348.0000 IN.
		S1-2 .000 S3-4 .000	XMRP 1339.9100 IN. XC
		S5-6 .000 TORB 9.700	YMRP .0000 IN. YC
			ZMRP 190.7500 IN. ZC
			SCALE .0300

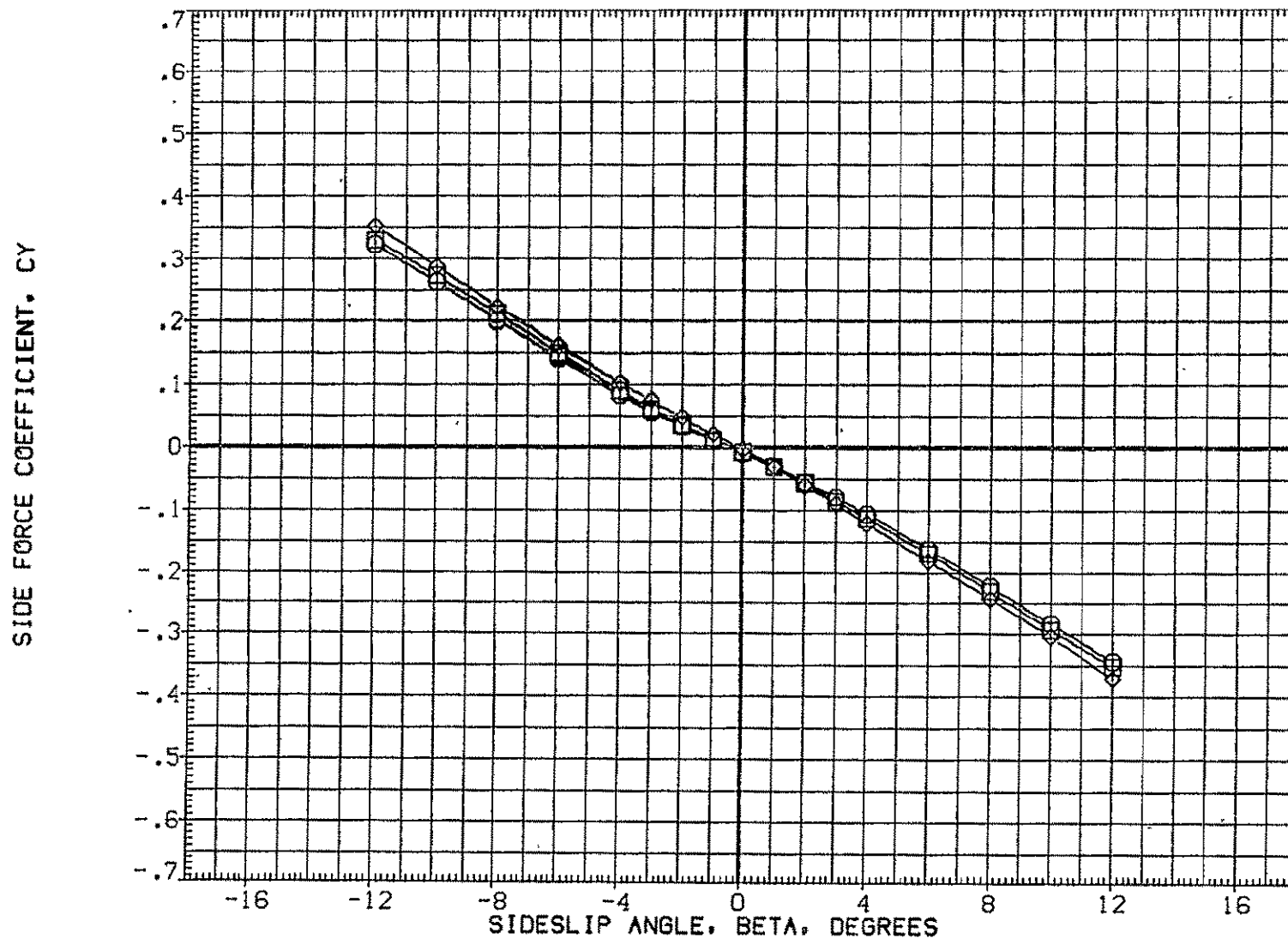


FIG.114 747+ORB(10 DEG)+TIP FINS, FLAPS 20 LAUNCH, ALPHA1= 8 DEG

SYMBOL	MACH	PARAMETRIC VALUES
○	.500	ALPHA1 8.000 STAB 1.000
□	.600	RUD-U .000 RUD-L .000
◇	.700	ELV-1B .000 ELV-0B 3.000
		S1-2 .000 S3-4 .000
		S5-6 .000 IORB 9.700

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

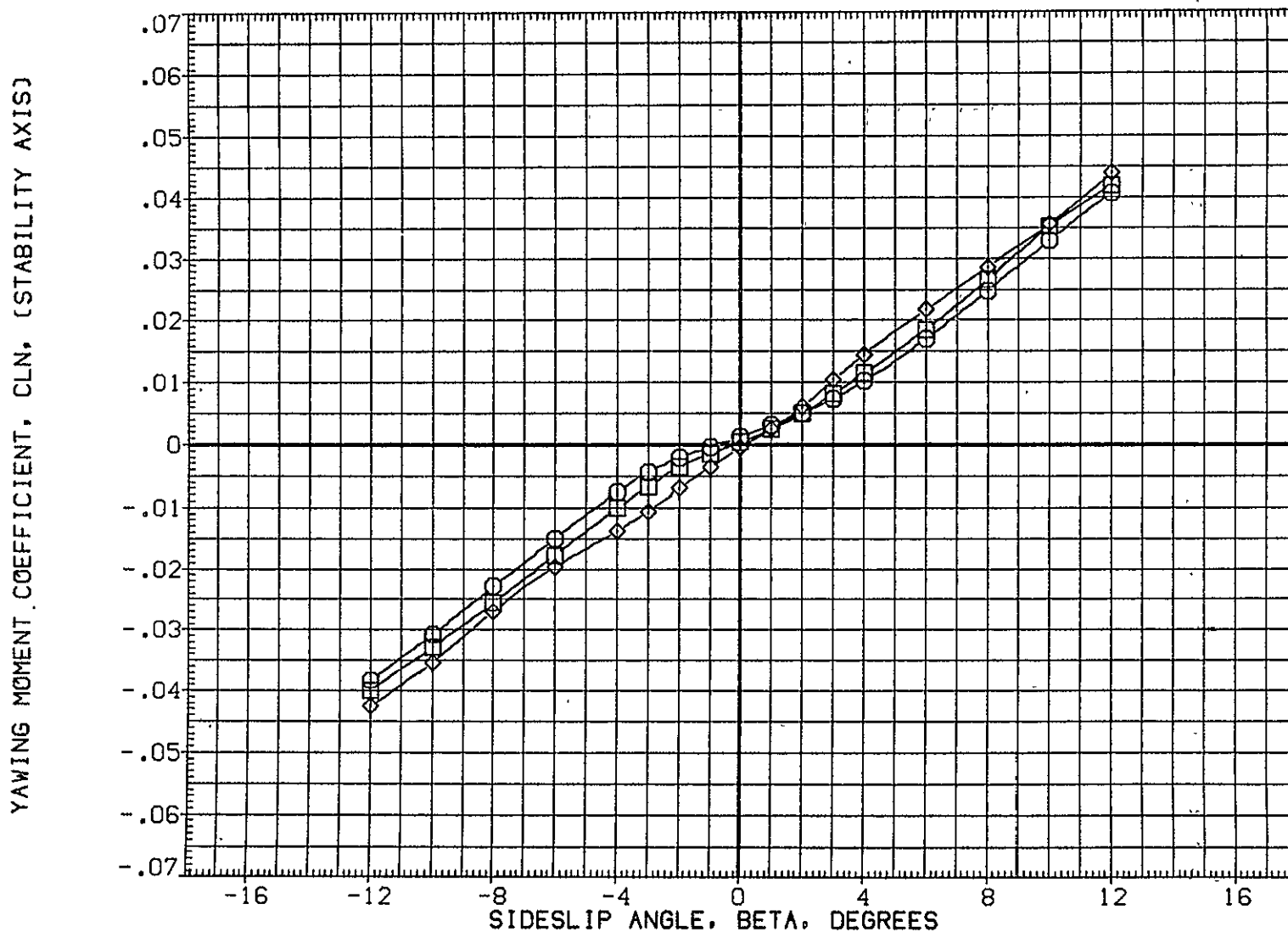


FIG.114 747+0RB(10 DEG)+TIP FINS, FLAPS 20 LAUNCH, ALPHA1= 8 DEG

TOTAL

PAGE 444

CA5 K1 F20 H15.6 V9.1 (PLUS. ORB TC5 AT38.1)(RGM072)

SYMBOL	MACH	PARAMETRIC VALUES
○	.500	ALPHA I 8.000 STAB 1.000
□	.600	RUD-U .000 RUD-L .000
◇	.700	ELV-1B .000 ELV-OB 3.000
		S1-2 .000 S3-4 .000
		S5-6 .000 10RB 9.700

REFERENCE INFORMATION	
SREF	5500.0000 SQ.FT.
LREF	327.8000 IN.
BREF	2349.0000 IN.
XMRP	1339.9100 IN. XC
YMRP	.0000 IN. YC
ZMRP	190.7500 IN. ZC
SCALE	.0300

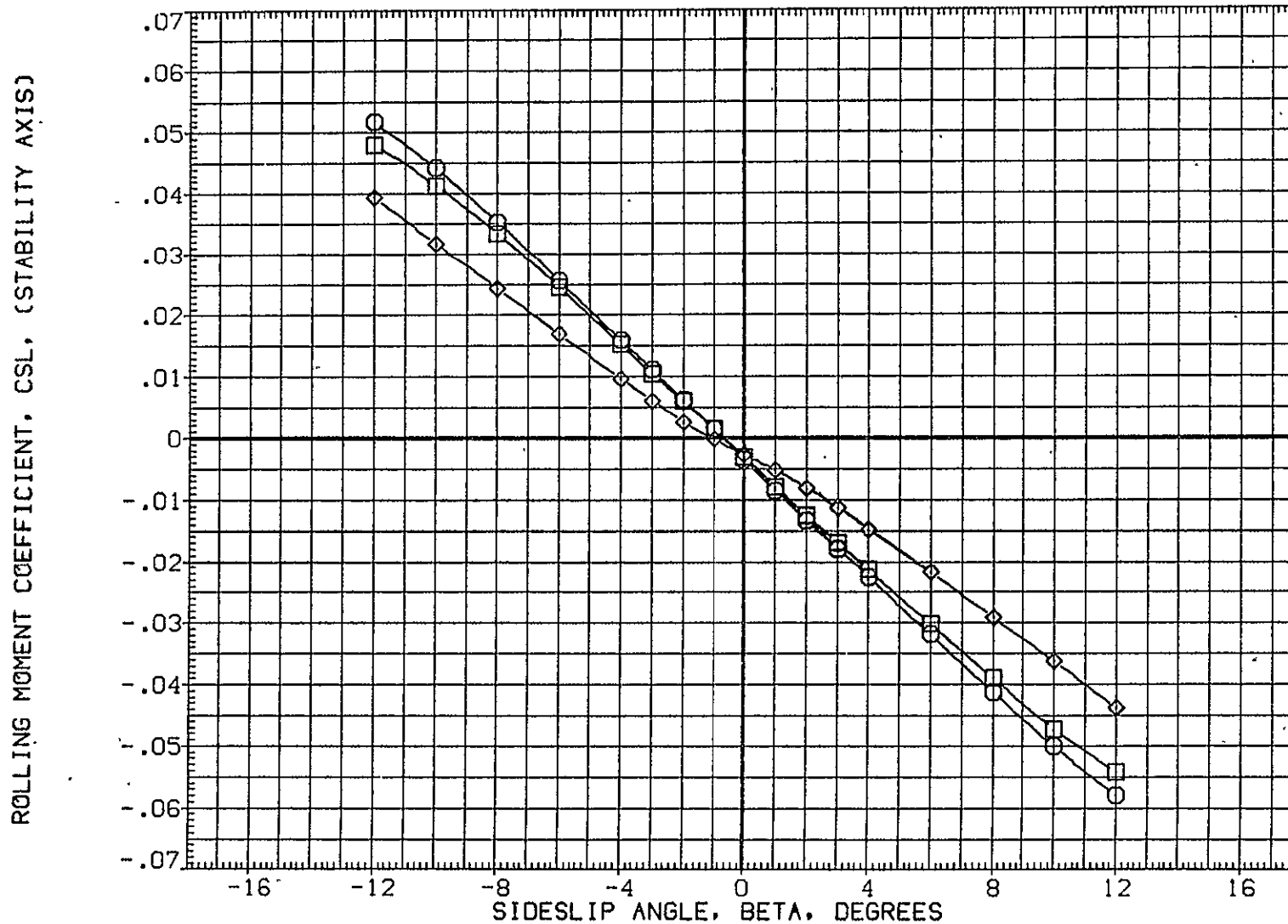


FIG.114 747+ORB(10 DEG)+TIP FINS, FLAPS 20 LAUNCH, ALPHA I= 8 DEG

TOTAL

SYMBOL

○
□
◇

MACH

.500
.600
.700ALPHA1
RUD-U
ELV-1B
S1-2
S5-6

PARAMETRIC VALUES

8.000
.000
.000
.000
.000STAB
RUD-L
ELV-0B
S3-4
10RB1.000
.000
3.000
.000
9.700

REFERENCE INFORMATION

SREF	5500.0000	SQ.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

INCREMENTAL SIDE FORCE COEFFICIENT(STABILITY AXIS). DCY

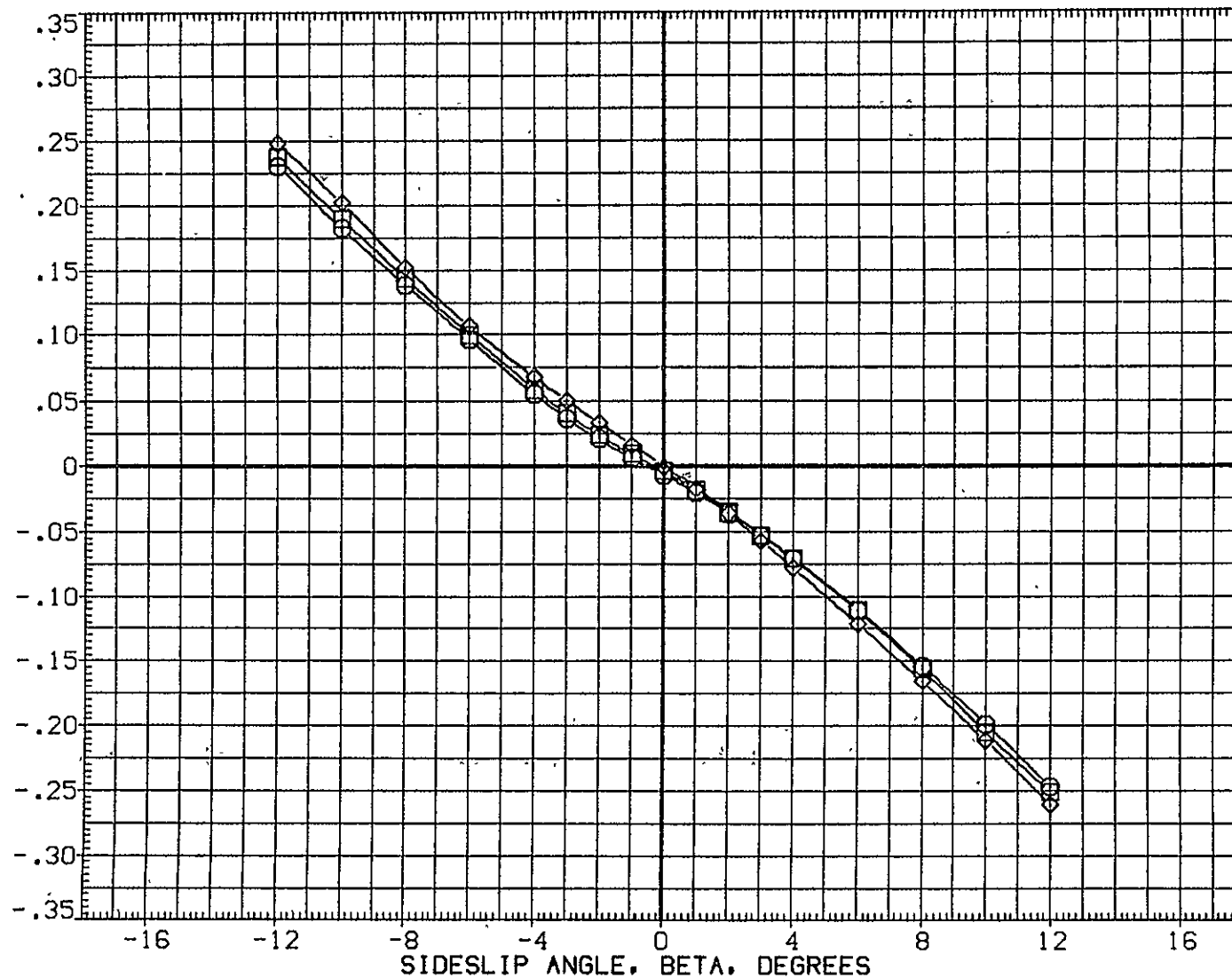


FIG.115 747+0RB(10 DEG)+TIP FINS, FLAPS 20 LAUNCH, ALPHA1= 8 DEG

747

PAGE 446

CA5 K1 F20 H15.6 V9.1 MINUS ORB TC5 AT38.1 (BGM072)

SYMBOL	MACH	PARAMETRIC VALUES				REFERENCE INFORMATION	
○	.500	ALPHA I	8.000	STAB	1.000	SREF	5500.0000 SQ.FT.
□	.600	RUD-U	.000	RUD-L	.000	LREF	327.8000 IN.
◇	.700	ELV-1B	.000	ELV-OB	3.000	BREF	2348.0000 IN.
		S1-2	.000	S3-4	.000	XMRP	1339.9100 IN. XC
		S5-6	.000	10RB	9.700	YMRP	.0000 IN. YC
						ZMRP	190.7500 IN. ZC
						SCALE	.0300

INCREMENTAL YAWING MOMENT COEFFICIENT(STABILITY AXIS), DCLN

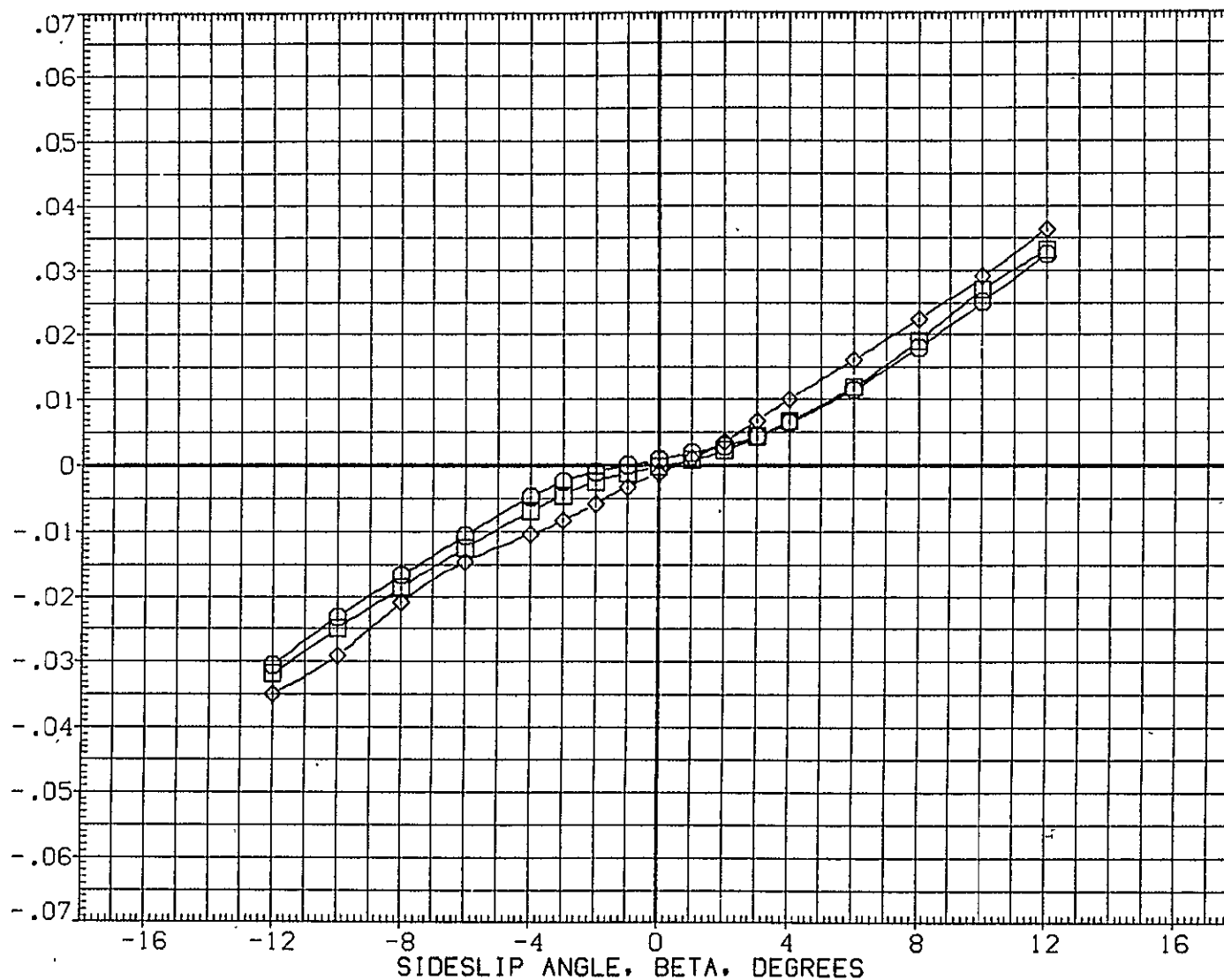


FIG.115 747+ORB(10 DEG)+TIP FINS, FLAPS 20 LAUNCH, ALPHA I= 8 DEG

747

SYMBOL	MACH	PARAMETRIC VALUES			
○	.500	ALPHA1	8.000	STAB	1.000
□	.600	RUD-U	.000	RUD-L	.000
◇	.700	ELV-1B	.000	ELV-OB	3.000
		S1-2	.000	S3-4	.000
		S5-6	.000	ICRB	9.700

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

INCREMENTAL ROLLING MOMENT COEFFICIENT(STABILITY AXIS), DCSL

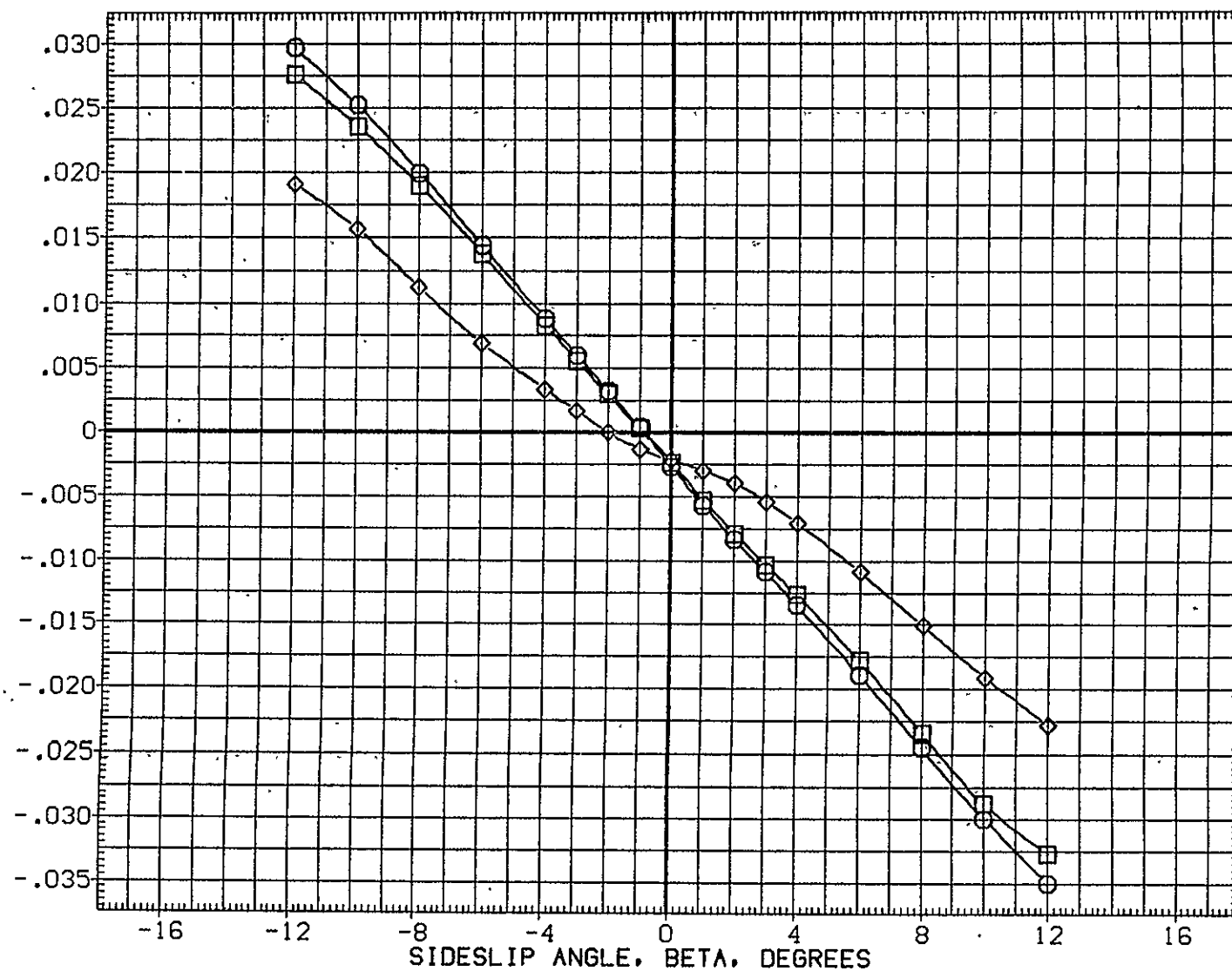


FIG.115 747+ORB(10 DEG)+TIP FINS, FLAPS 20 LAUNCH, ALPHA1= 8 DEG

747

CA5 ORB TC5 AT38.1 (PRES. K1 F20 H15.6 V9.1)(XGM072)

SYMBOL	MACH	PARAMETRIC VALUES	REFERENCE INFORMATION
○	.150	ALPHA I 8.000 STAB 1.000	SREF 2690.0000 SQ.FT.
□	.500	RUD-U .000 RUD-L .000	LREF 474.8100 IN.
◇	.600	ELV-1B .000 ELV-OB 3.000	BREF 936.6800 IN.
△	.699	S1-2 .000 S3-4 .000	XMRP 1109.0000 IN. X0
		S5-6 .000 10RB 9.700	YMRP .0000 IN. Y0
			ZMRP 375.0000 IN. Z0
			SCALE .0300

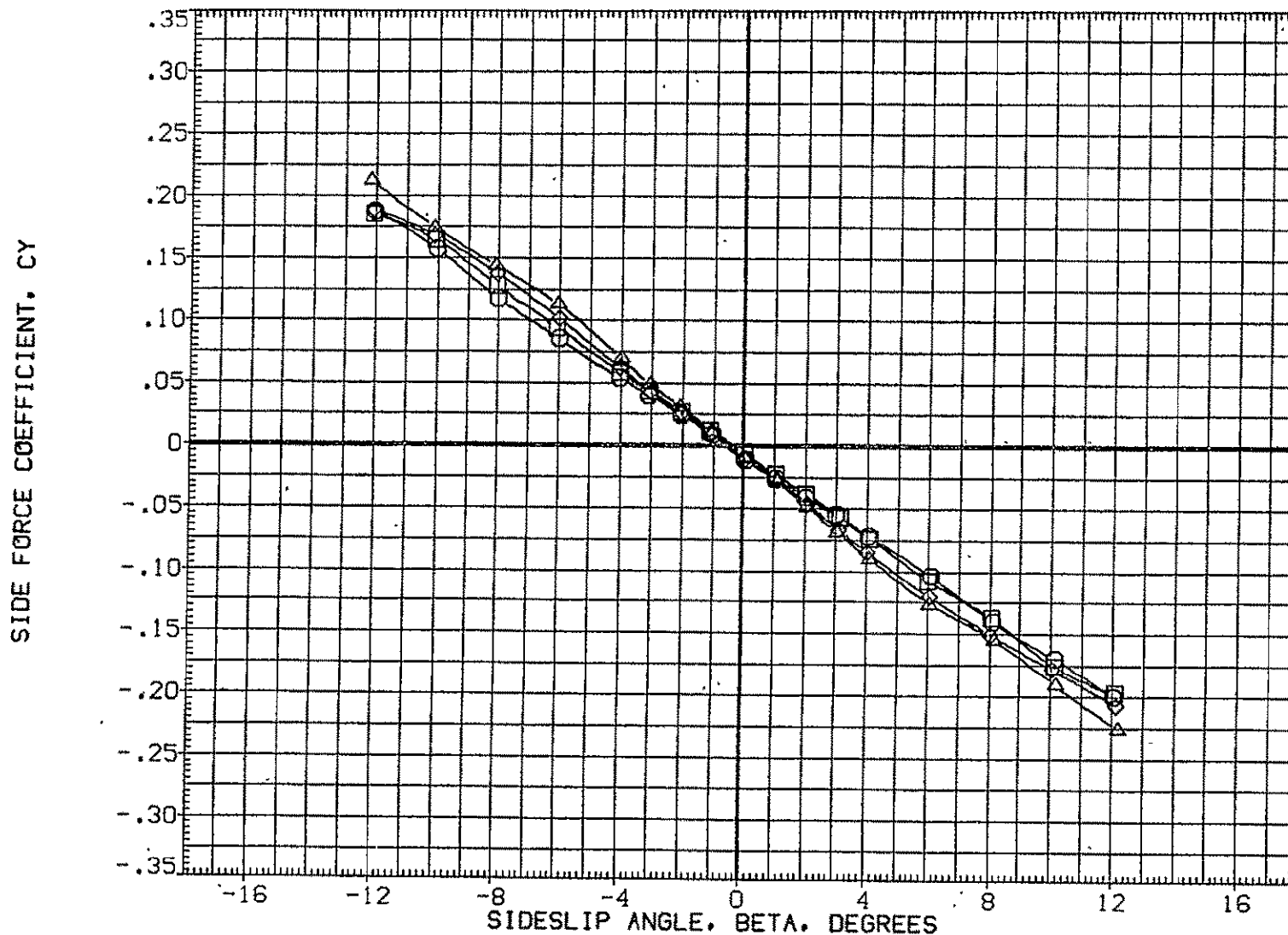


FIG.116 747+ORB(10 DEG)+TIP FINS, FLAPS 20 LAUNCH, ALPHA I= 8 DEG

ORB

SYMBOL	MACH	PARAMETRIC VALUES
○	.150	ALPHA I 8.000 STAB 1.000
□	.500	RUD-U .000 RUD-L .000
◇	.600	ELV-1B .000 ELV-OB 3.000
△	.699	S1-2 .000 S3-4 .000
		S5-6 .000 IORB 9.700

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN. X0
YMRP	.0000	IN. Y0
ZMRP	375.0000	IN. Z0
SCALE	.0300	

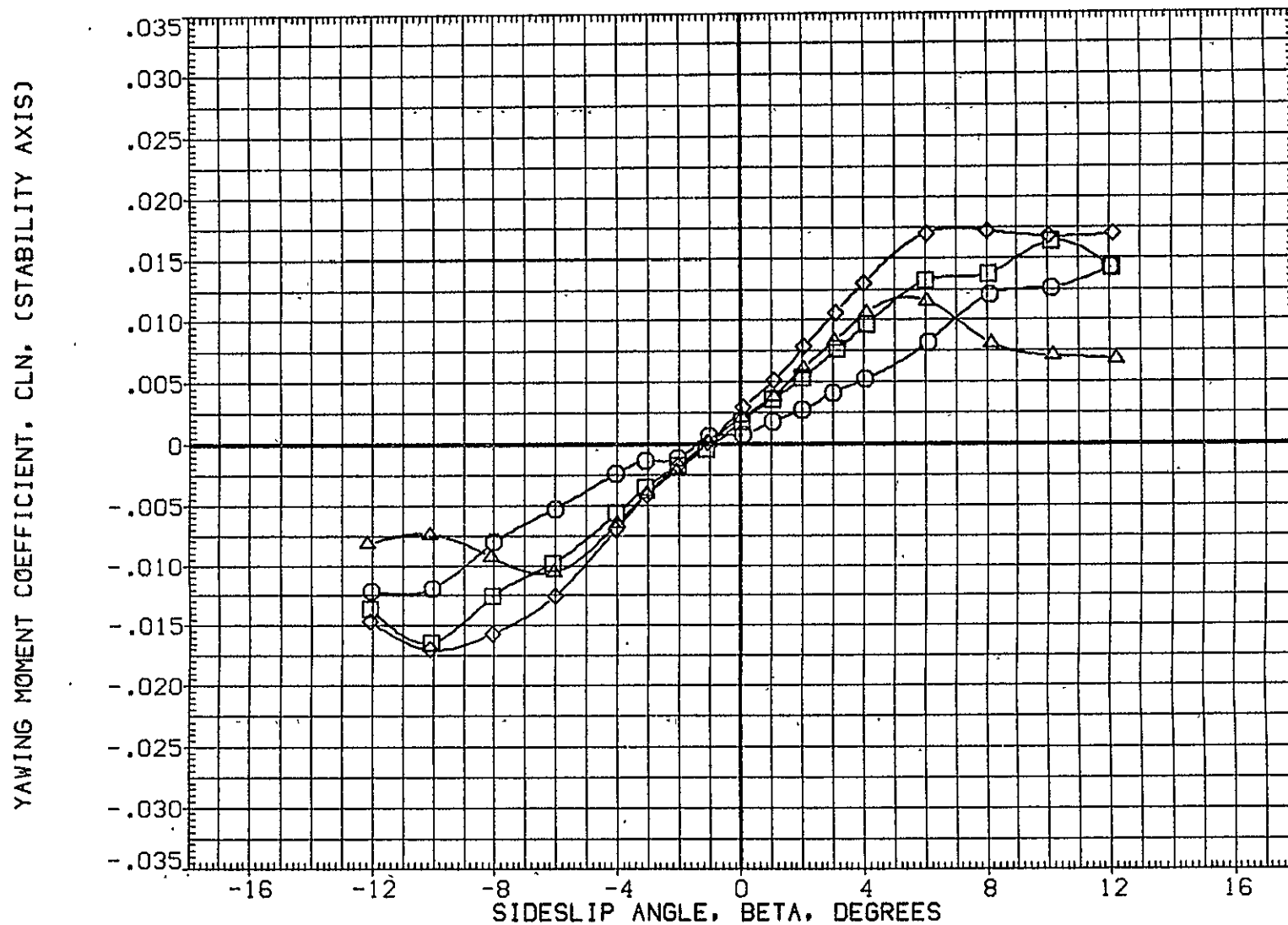


FIG.116 747+ORB(10 DEG)+TIP FINS, FLAPS 20 LAUNCH, ALPHA I= 8 DEG

ORB

CAS 0RB TC5 AT38.1 (PRES. K1 F20 H15.6 V9.1)(XGM072)

SYMBOL	MACH	PARAMETRIC VALUES				REFERENCE INFORMATION		
○	.150	ALPHA I	8.000	STAB	1.000	SREF	2690.0000	SG.FT.
□	.500	RUD-U	.000	RUD-L	.000	LREF	474.8100	IN.
◇	.600	ELV-1B	.000	ELV-0B	3.000	BREF	936.6800	IN.
△	.699	S1-2	.000	S3-4	.000	XMRP	1109.0000	IN. X0
		S5-6	.000	10RB	9.700	YMRP	.0000	IN. Y0
						ZMRP	375.0000	IN. Z0
						SCALE	.0300	

ROLLING MOMENT COEFFICIENT, CSL, (STABILITY AXIS)

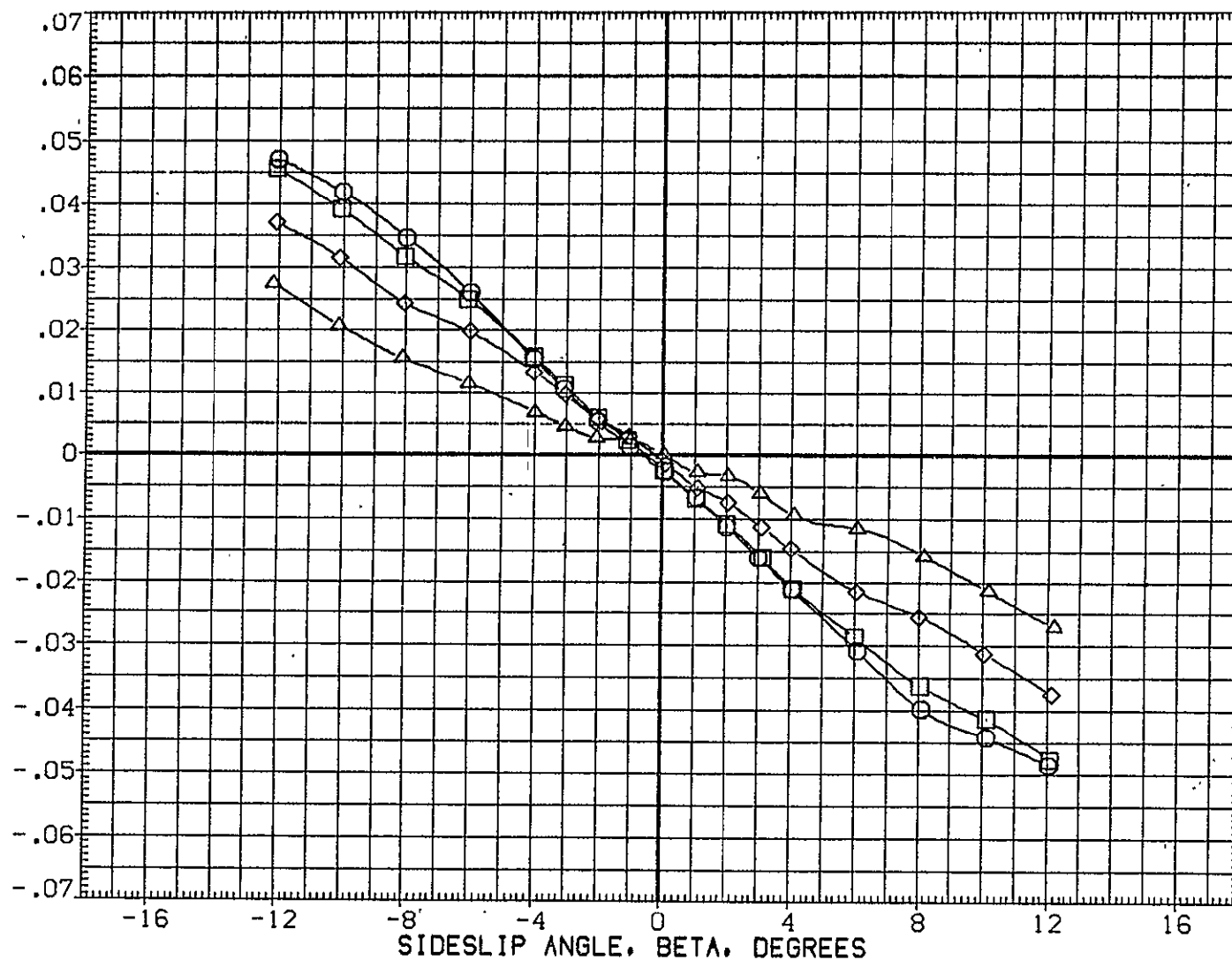


FIG.116 747+0RB(10 DEG)+TIP FINS, FLAPS 20 LAUNCH, ALPHA I= 8 DEG

0RB

SYMBOL	MACH	PARAMETRIC VALUES
○	.500	ALPHA1 6.000 STAB 1.000
□	.600	RUD-U .000 RUD-L .000
◇	.700	ELV-1B .000 ELV-0B 3.000
		S1-2 .000 S3-4 .000
		S5-6 .000 10RB 9.700

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

SIDE FORCE COEFFICIENT, CY

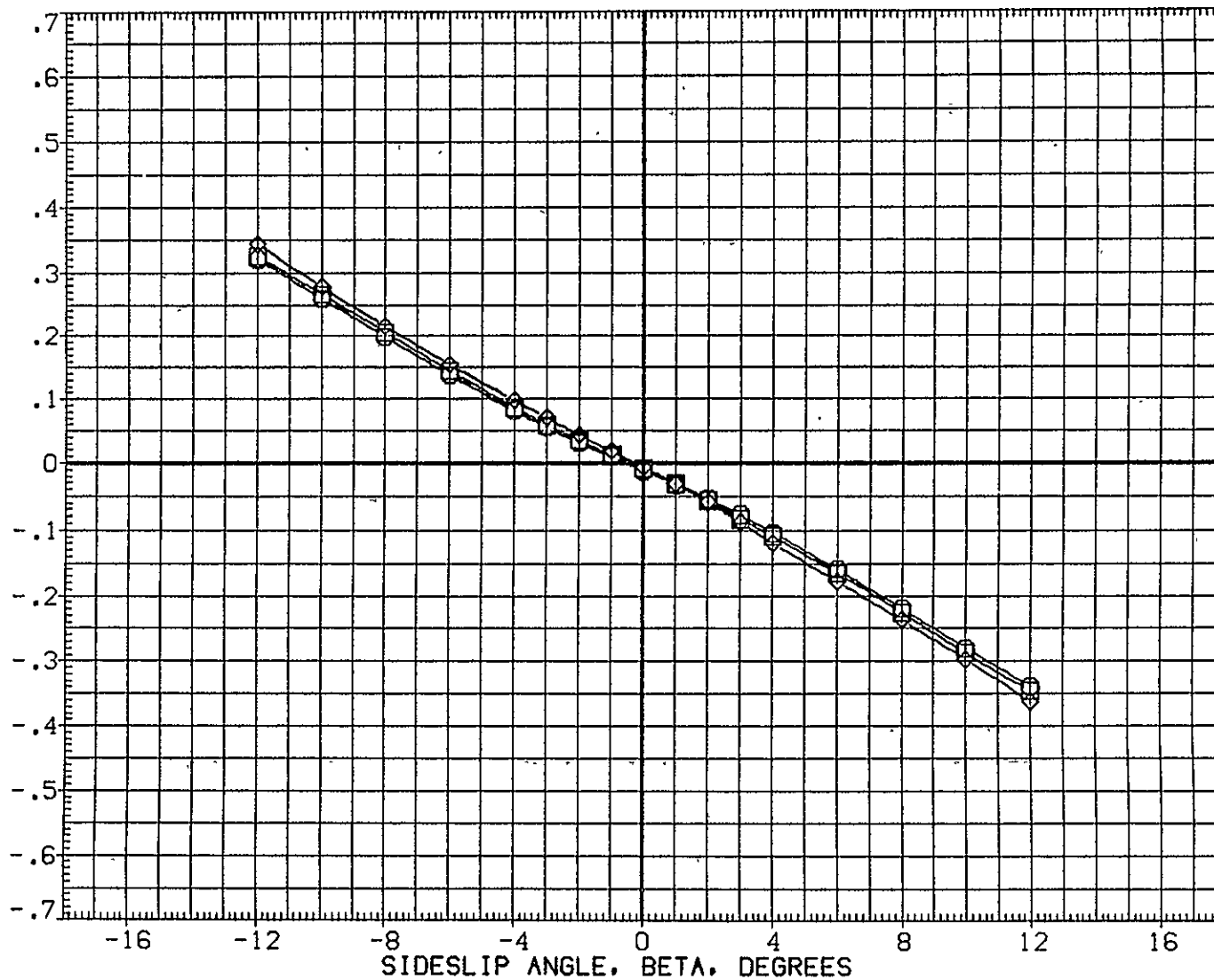


FIG.117 747+0RB(10 DEG)+TIP FINS, FLAPS 20 LAUNCH, ALPHA1= 6 DEG

TOTAL

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CA5 K1 F20 H15.6 V9.1 (PLUS. ORB TC5 AT38.1)(RGM073)

SYMBOL
○
□
◇

MACH

ALPHA1

PARAMETRIC VALUES

6.000

STAB

1.000

RUD-U

.000

ELV-1B

.000

S1-2

.000

S5-6

.000

S3-4

.000

ICRB

9.700

REFERENCE INFORMATION

SREF	5500.0000	SQ.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRF	1339.9100	IN. XC
YMRF	.0000	IN. YC
ZMRF	190.7500	IN. ZC
SCALE	.0300	

YAWING MOMENT COEFFICIENT, CLN, (STABILITY AXIS)

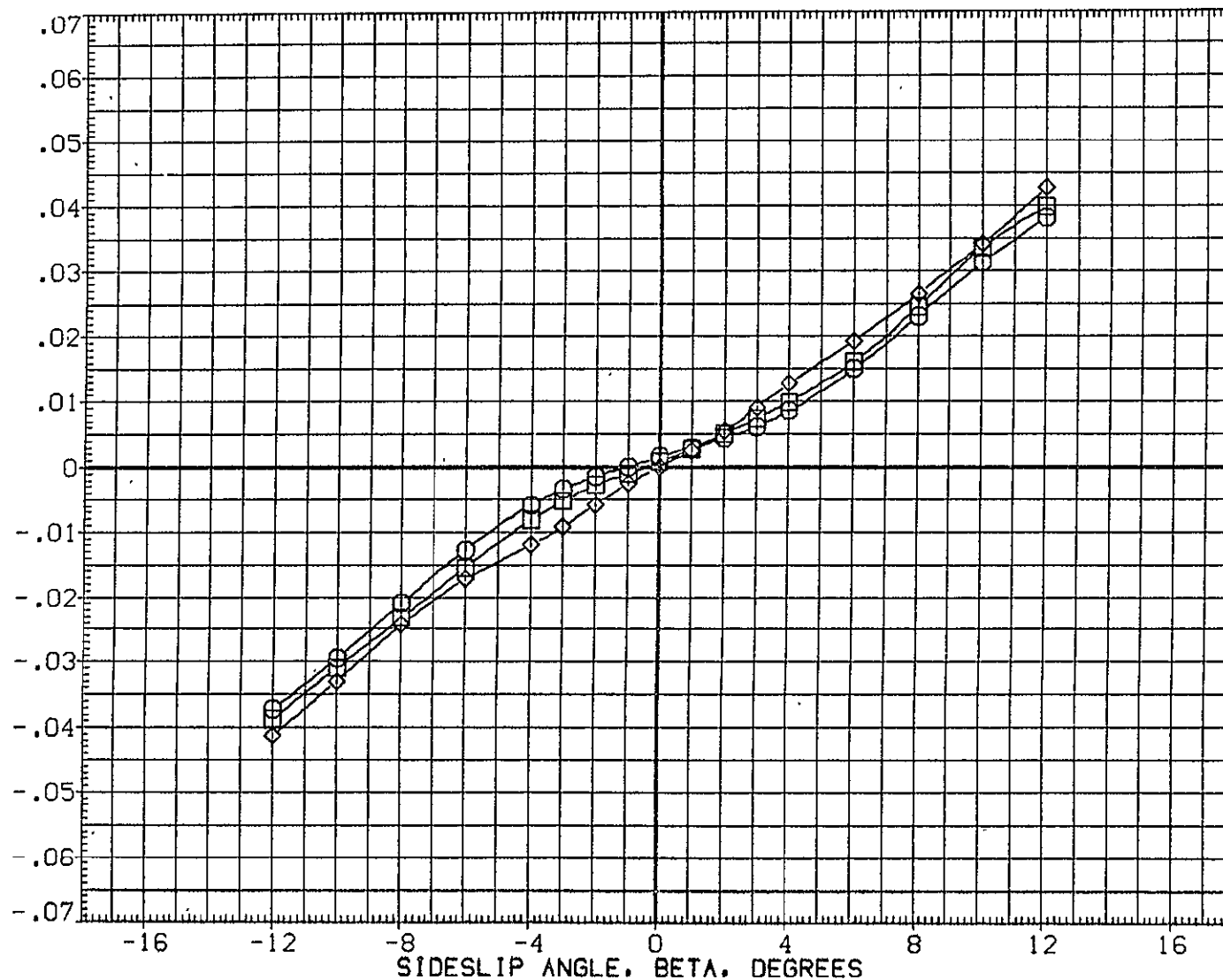


FIG.117 747+ORB(10 DEG)+TIP FINS, FLAPS 20 LAUNCH, ALPHA1= 6 DEG

TOTAL

SYMBOL
○
□
◇

MACH

ALPHA I
RUD-U
ELV-1B
S1-2
S5-6

PARAMETRIC VALUES

6.000 STAB 1.000
.000 RUD-L .000
.000 ELV-0B 3.000
.000 S3-4 .000
.000 10RB 9.700

REFERENCE INFORMATION

SREF 5500.0000 SQ.FT.
LREF 327.8000 IN.
BREF 2348.0000 IN.
XMRP 1339.9100 IN. XC
YMRP .0000 IN. YC
ZMRP 190.7500 IN. ZC
SCALE .0300

ROLLING MOMENT COEFFICIENT, CSL, (STABILITY AXIS)

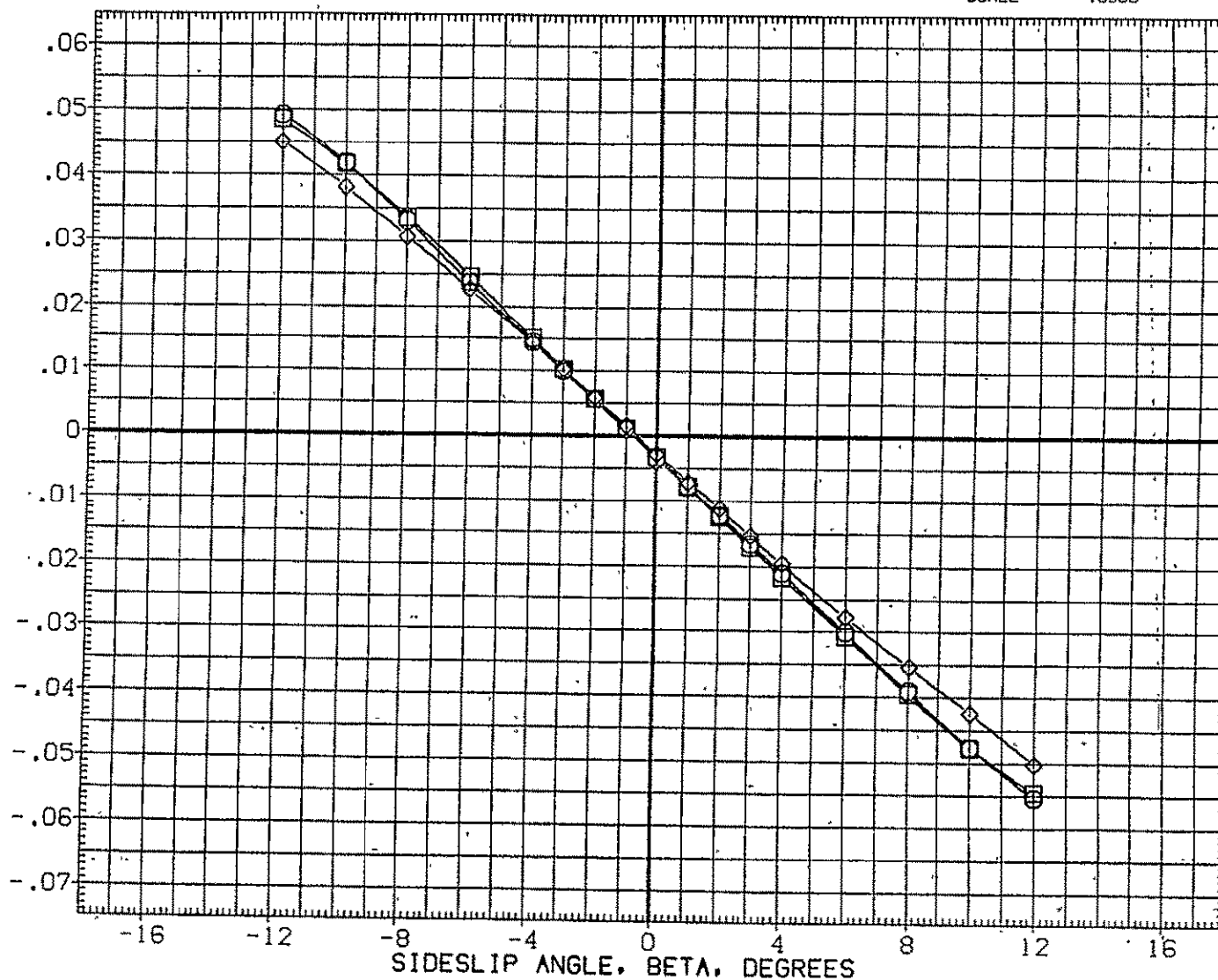


FIG.117 747+0RB(10 DEG)+TIP FINS, FLAPS 20 LAUNCH; ALPHA I= 6 DEG

TOTAL

CA5 K1 F20 H15.6 V9.1 MINUS ORB TC5 AT38.1 (BGM073)

SYMBOL	MACH	PARAMETRIC VALUES	REFERENCE INFORMATION
○	.500	ALPHA I 6.000 STAB 1.000	SREF 5500.0000 SQ.FT.
□	.600	RUD-U .000 RUD-L .000	LREF 327.8000 IN.
◇	.700	ELV-IB .000 ELV-OB 3.000	BREF 2348.0000 IN.
		S1-2 .000 S3-4 .000	XMRP 1339.9100 IN. XC
		S5-6 .000 TORB 9.700	YMRP .0000 IN. YC
			ZMRP 190.7500 IN. ZC
			SCALE .0300

INCREMENTAL SIDE FORCE COEFFICIENT(STABILITY AXIS), DCY

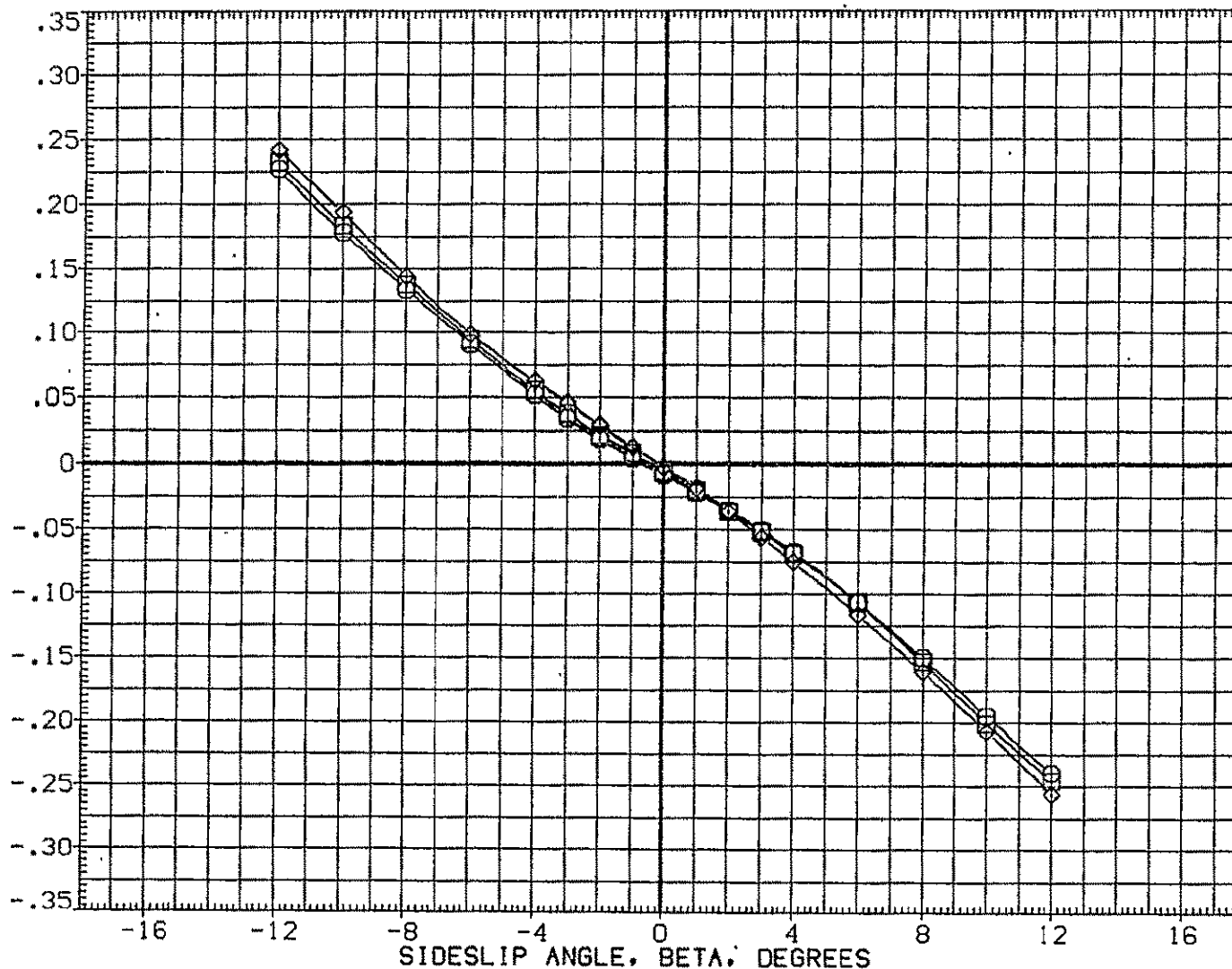


FIG.118 747+ORB(10 DEG)+TIP FINS, FLAPS 20 LAUNCH, ALPHA I= 6 DEG

747

SYMBOL

○
□
◇

MACH

.500

ALPHA

.600

.700

SI-2

SS-6

PARAMETRIC VALUES

6.000

STAB

.000

RUD-L

.000

ELV-OB

.000

S3-4

.000

10RB

9.700

1.000

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3.000

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REFERENCE INFORMATION

SREF 5500.0000 SQ.FT.

LREF 327.8000 IN.

BREF 2348.0000 IN.

XMRP 1339.9100 IN. XC

YMRP .0000 IN. YC

ZMRP 190.7500 IN. ZC

SCALE .0300

INCREMENTAL YAWING MOMENT COEFFICIENT (STABILITY AXIS), DCLN

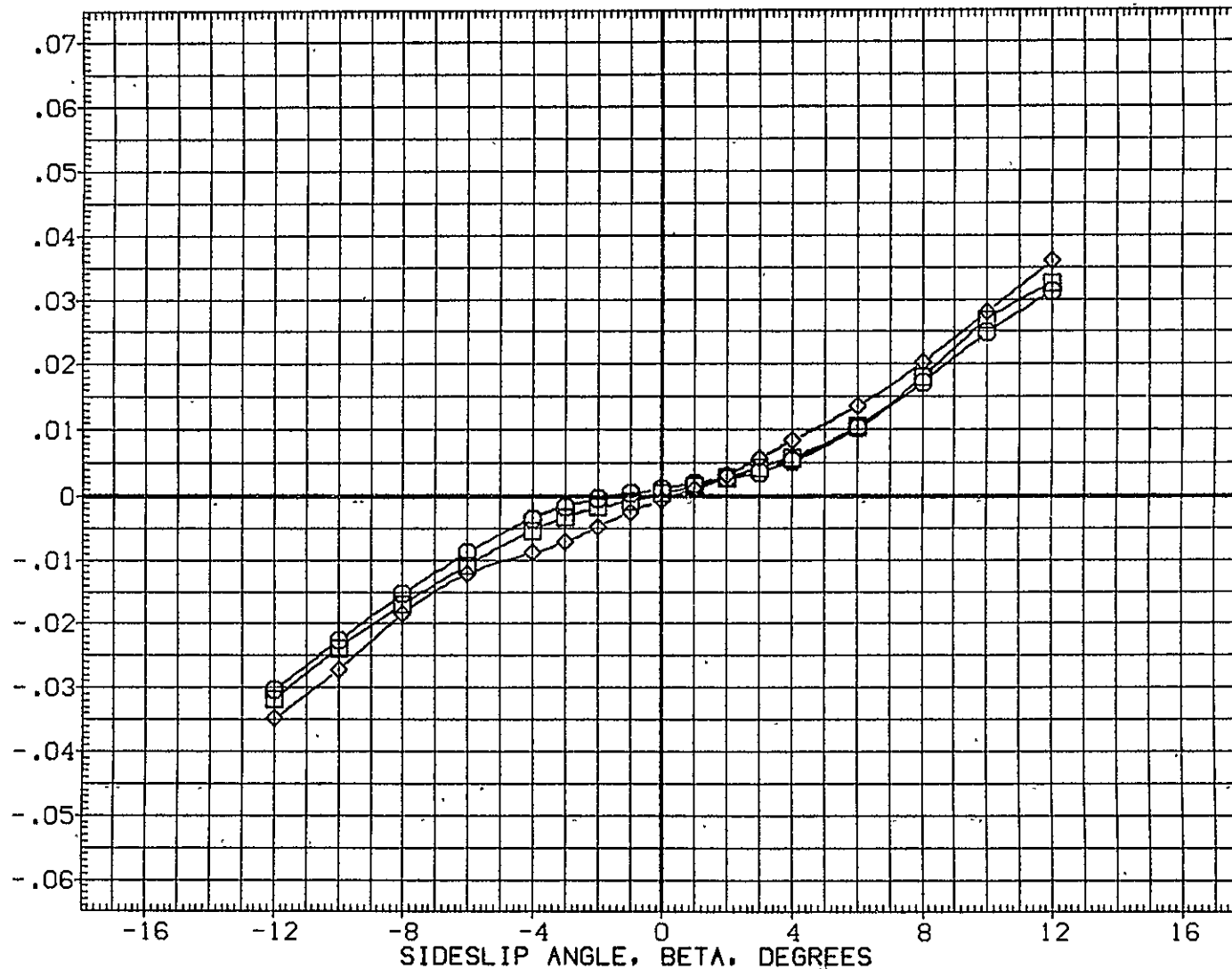


FIG.118 747+ORB(10 DEG)+TIP FINS, FLAPS 20 LAUNCH, ALPHA= 6 DEG

747

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CA5 K1 F20 H15.6 V9.1 MINUS ORB TC5 AT38.1 (BGM073)

SYMBOL
○
□
◇

MACH	PARAMETRIC VALUES
.500	ALPHA1 6.000 STAB 1.000
.600	RUD-U .000 RUD-L .000
.700	ELV-1B .000 ELV-OB 3.000
	S1-2 .000 S3-4 .000
	S5-6 .000 IORB 9.700

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

INCREMENTAL ROLLING MOMENT COEFFICIENT(STABILITY AXIS), DCSL

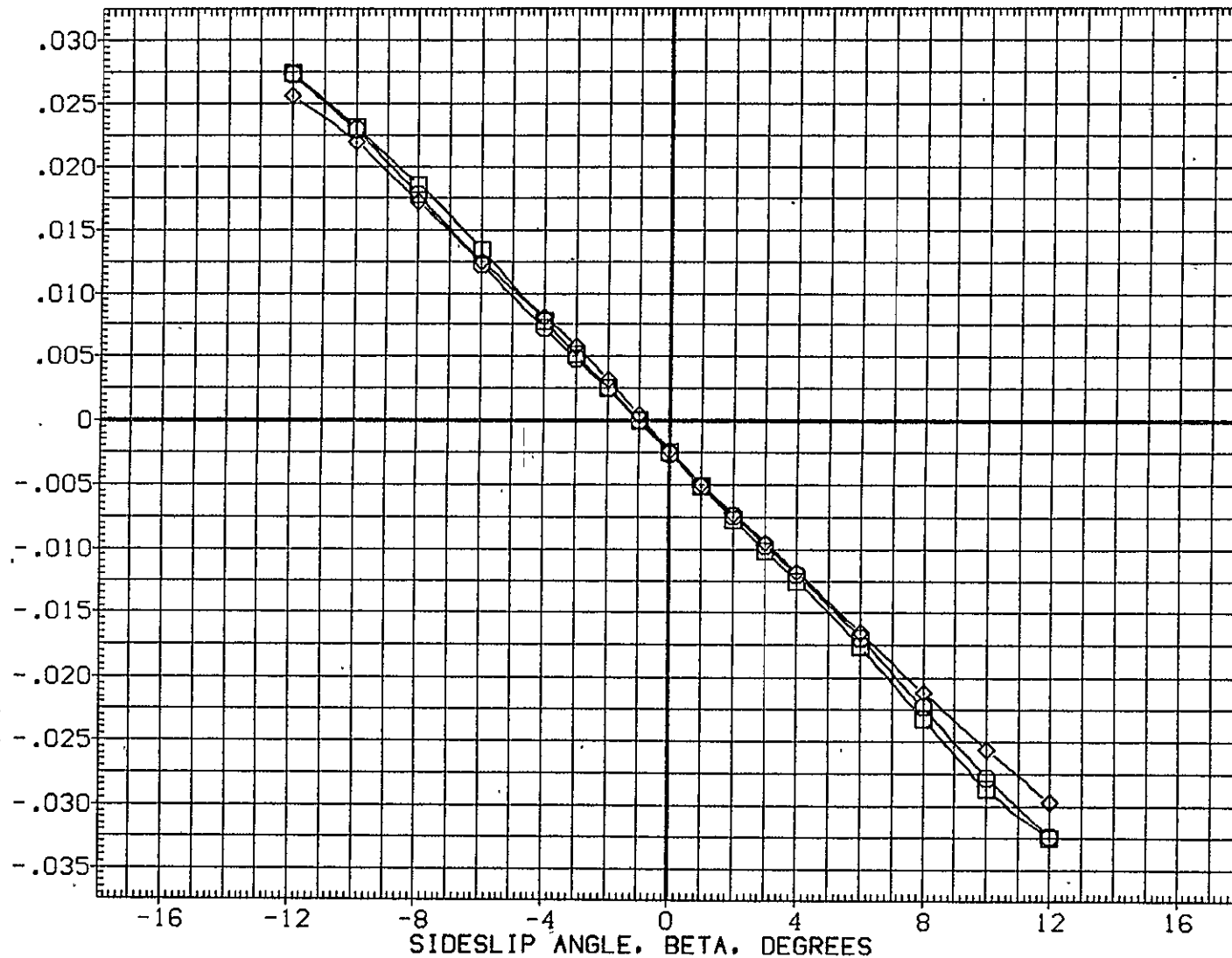


FIG.118 747+ORB(10 DEG)+TIP FINS, FLAPS 20 LAUNCH, ALPHA1= 6 DEG

747

SYMBOL	MACH	PARAMETRIC VALUES	REFERENCE INFORMATION
○	.151	ALPHA1 6.000 STAB 1.000	SREF 2690.0000 SQ.FT.
□	.501	RUD-U .000 RUD-L .000	LREF 474.8100 IN.
◇	.601	ELV-1B .000 ELV-0B 3.000	BREF 936.6800 IN.
△	.700	S1-2 .000 S3-4 .000	YMRP 1109.0000 IN. X0
		S5-6 .000 10RB 9.700	ZMRP .0000 IN. Y0
			SCALE .0300

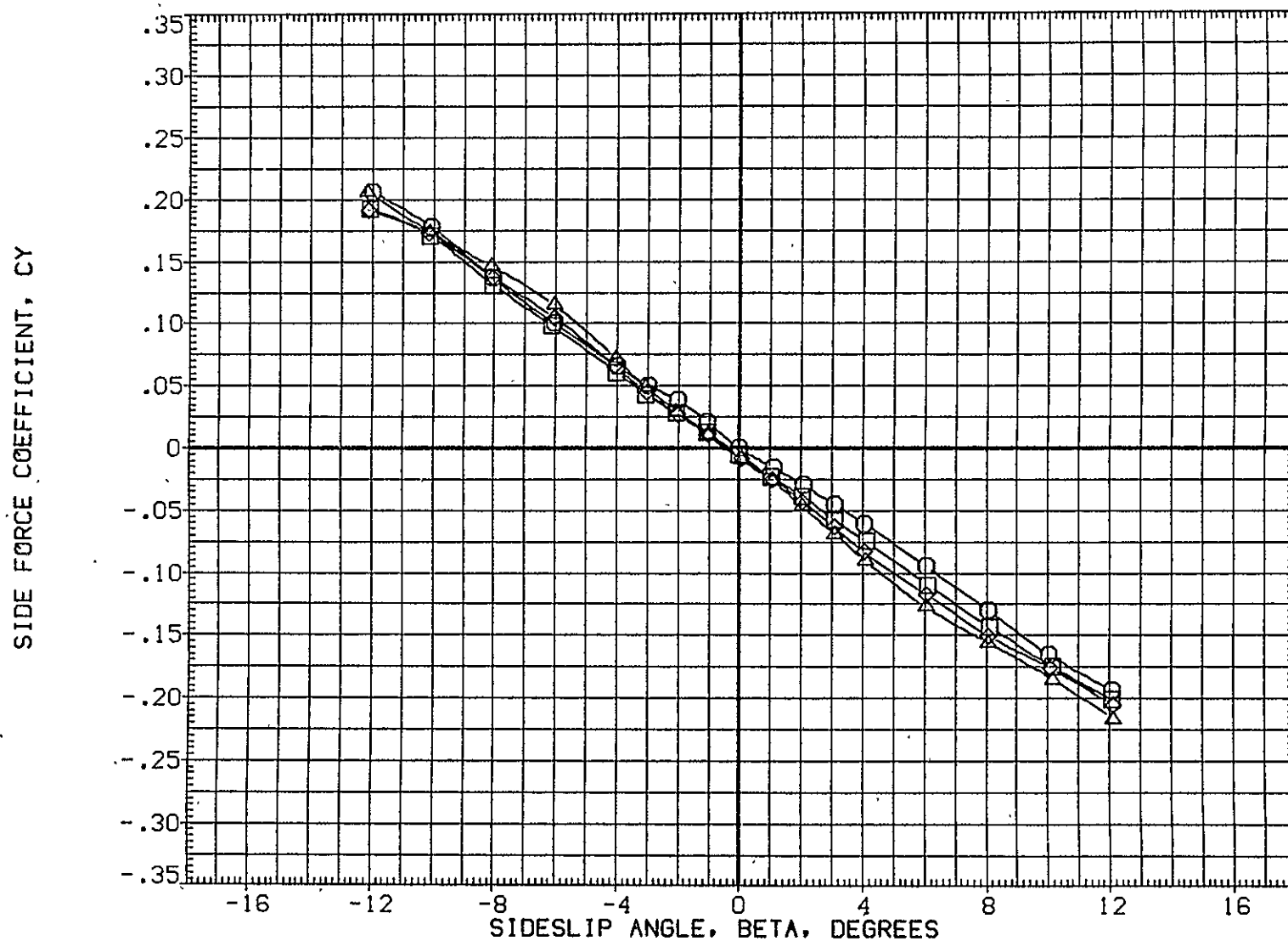


FIG.119 747+0RB(10 DEG)+TIP FINS, FLAPS 20 LAUNCH, ALPHA1= 6 DEG

0RB

CA5 ORB TC5 AT38.1 (PRES. K1 F20 H15.6 V9.1)(XGM073)

SYMBOL	MACH	PARAMETRIC VALUES	REFERENCE INFORMATION
○	.151	ALPHA1 6.000 STAB 1.000	SREF 2690.0000 SQ.FT.
□	.501	RUD-U .000 RUD-L .000	LREF 474.8100 IN.
◇	.601	ELV-1B .000 ELV-OB 3.000	BREF 936.6800 IN.
△	.700	S1-2 .000 S3-4 .000	XMRP 1109.0000 IN. X0
		S5-6 .000 10RB 9.700	YMRP .0000 IN. Y0
			ZMRP 375.0000 IN. Z0
			SCALE .0300

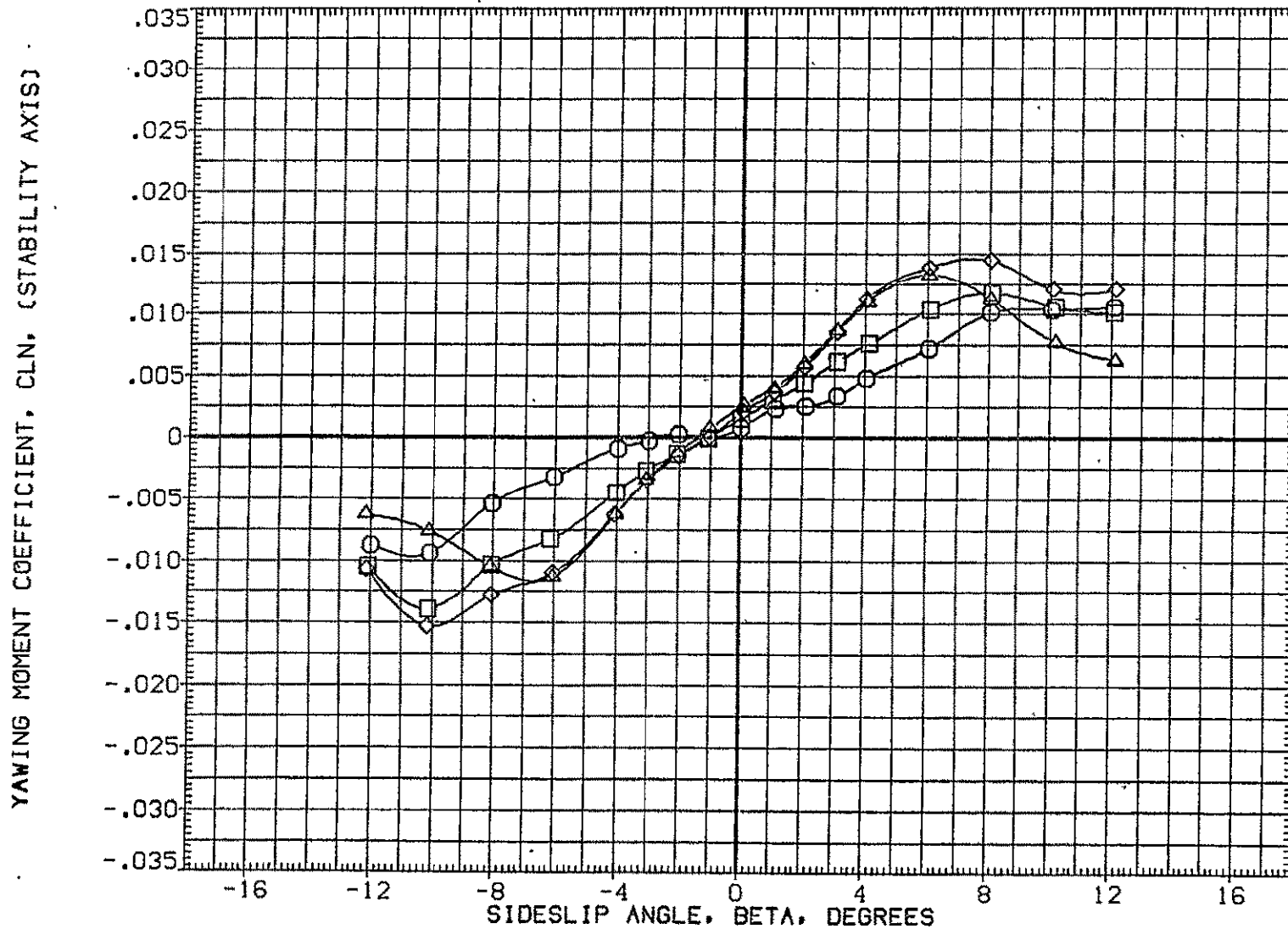


FIG.119 747+ORB(10 DEG)+TIP FINS, FLAPS 20 LAUNCH, ALPHA1= 6 DEG

ORB

SYMBOL	MACH	PARAMETRIC VALUES	REFERENCE INFORMATION
○	.151	ALPHA1 6.000 STAB 1.000	SREF 2690.0000 SQ.FT.
□	.501	RUD-U .000 RUD-L .000	LREF 474.8100 IN.
◇	.601	ELV-1B .000 ELV-0B 3.000	BREF 936.6800 IN.
△	.700	S1-2 .000 S3-4 .000	XMRP 1109.0000 IN. X0
		SS-6 .000 IORB 9.700	YMRP .0000 IN. Y0-
			ZMRP 375.0000 IN. Z0
			SCALE .0300

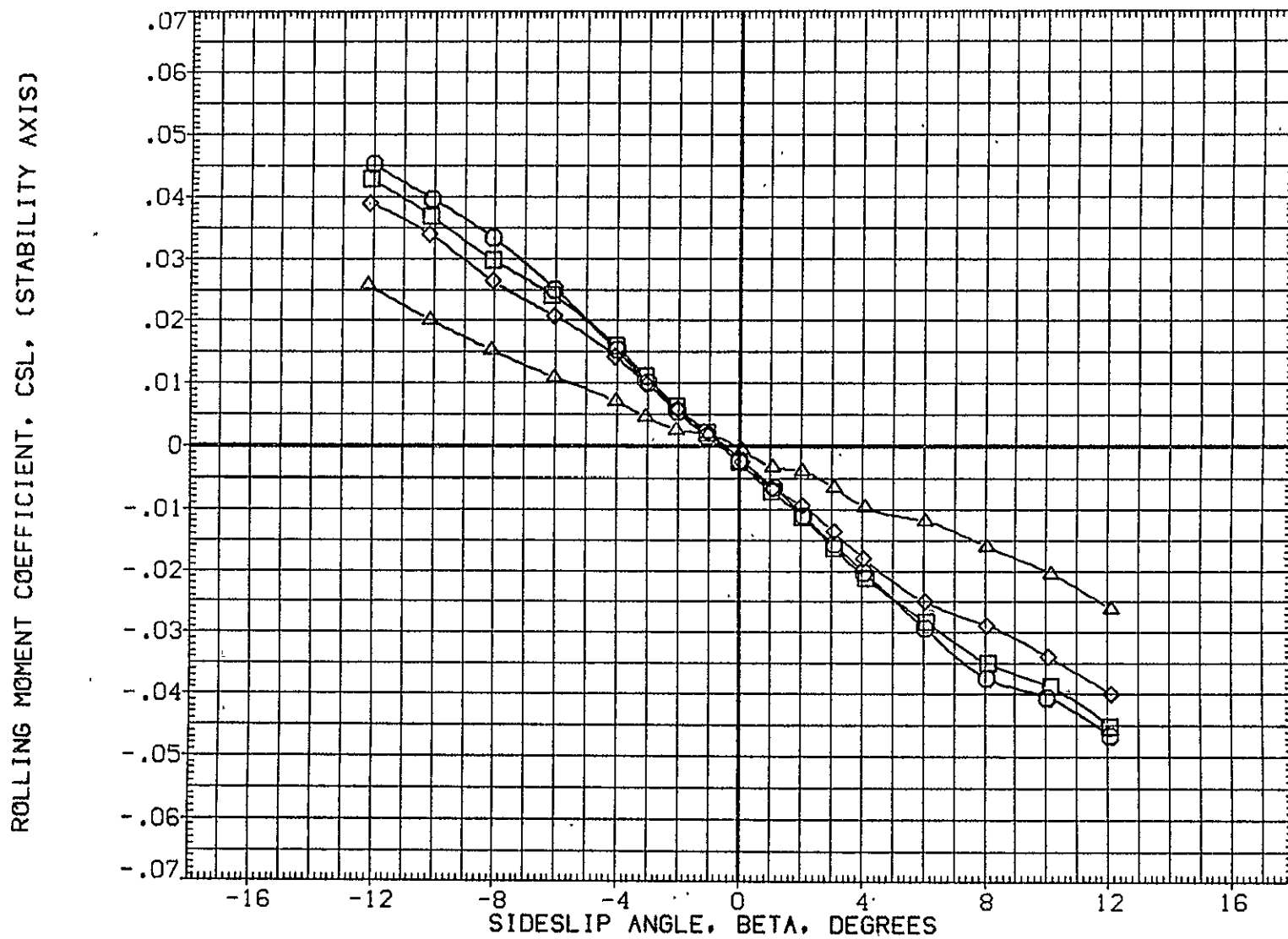


FIG.119 747+0RB(10 DEG)+TIP FINS, FLAPS 20 LAUNCH, ALPHA1= 6 DEG

0RB

CA5 K1 F20 H15.1A V9.1 (PLUS. ORB TC5 AT38.1)(RGM076)

SYMBOL
○
□
◇

MACH

.500

.600

.700

ALPHA1

RUD-U

ELV-1B

S1-2

S5-6

PARAMETRIC VALUES

6.000

.000

.000

45.000

45.000

STAB

RUD-L

ELV-0B

S3-4

10RB

1.000

.000

3.000

45.000

9.700

REFERENCE INFORMATION

SREF	5500.0000	SQ.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

SIDE FORCE COEFFICIENT, CY

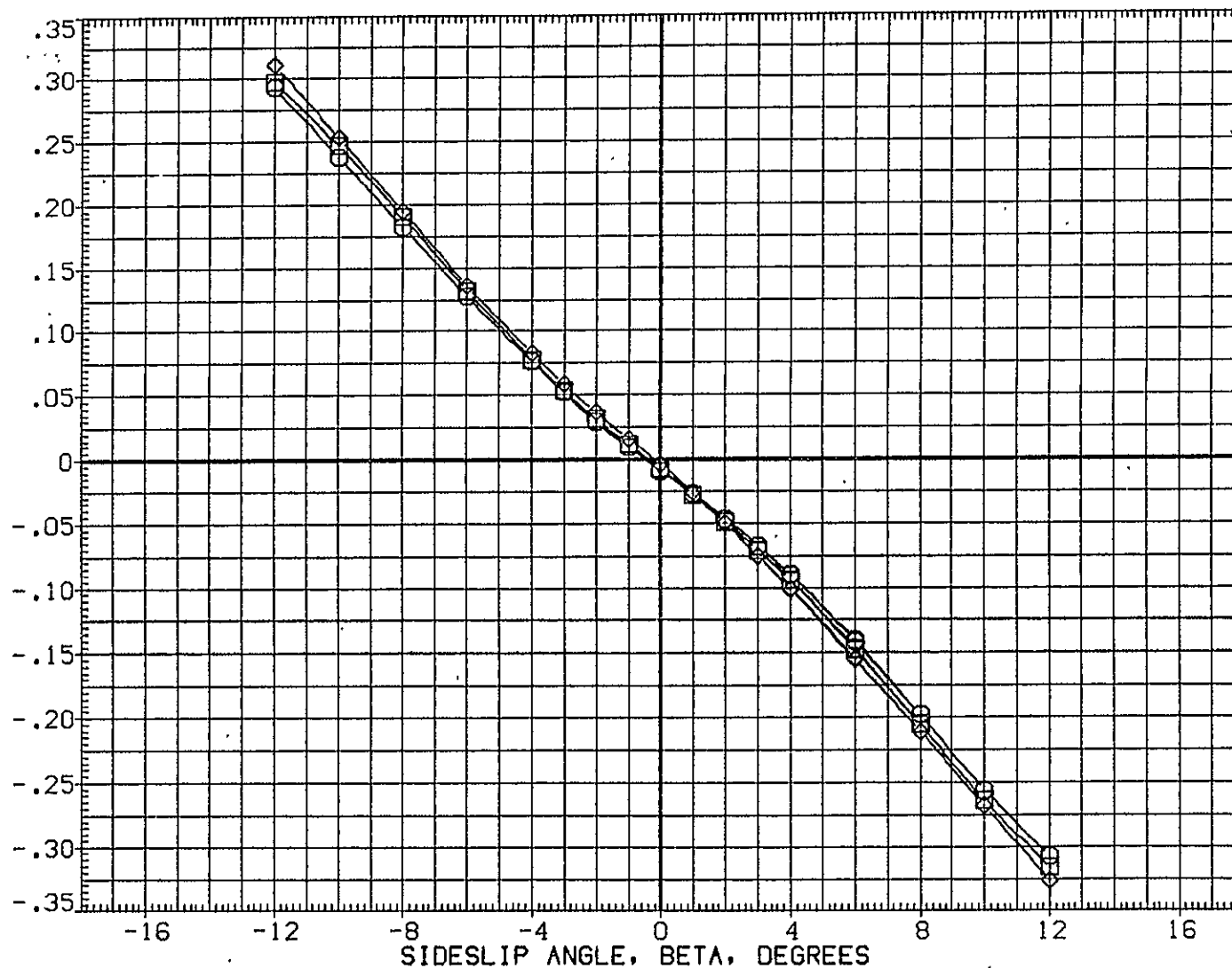


FIG.120 747+ORB(10 DEG)+SP45, FLAPS 20 LAUNCH, ALPHA1= 6 DEG

TOTAL

SYMBOL	MACH	PARAMETRIC VALUES	REFERENCE INFORMATION
○	.500	ALPHA1 6.000 STAB 1.000	SREF 5500.0000 SQ.FT.
□	.600	RUD-U .000 RUD-L .000	LREF 327.8000 IN.
◇	.700	ELV-1B .000 ELV-0B 3.000	BREF 2348.0000 IN.
		S1-2 45.000 S3-4 45.000	XMRF 1339.9100 IN. XC
		S5-6 45.000 TORB 9.700	YMRF .0000 IN. YC
			ZMRF 190.7500 IN. ZC
			SCALE .0300

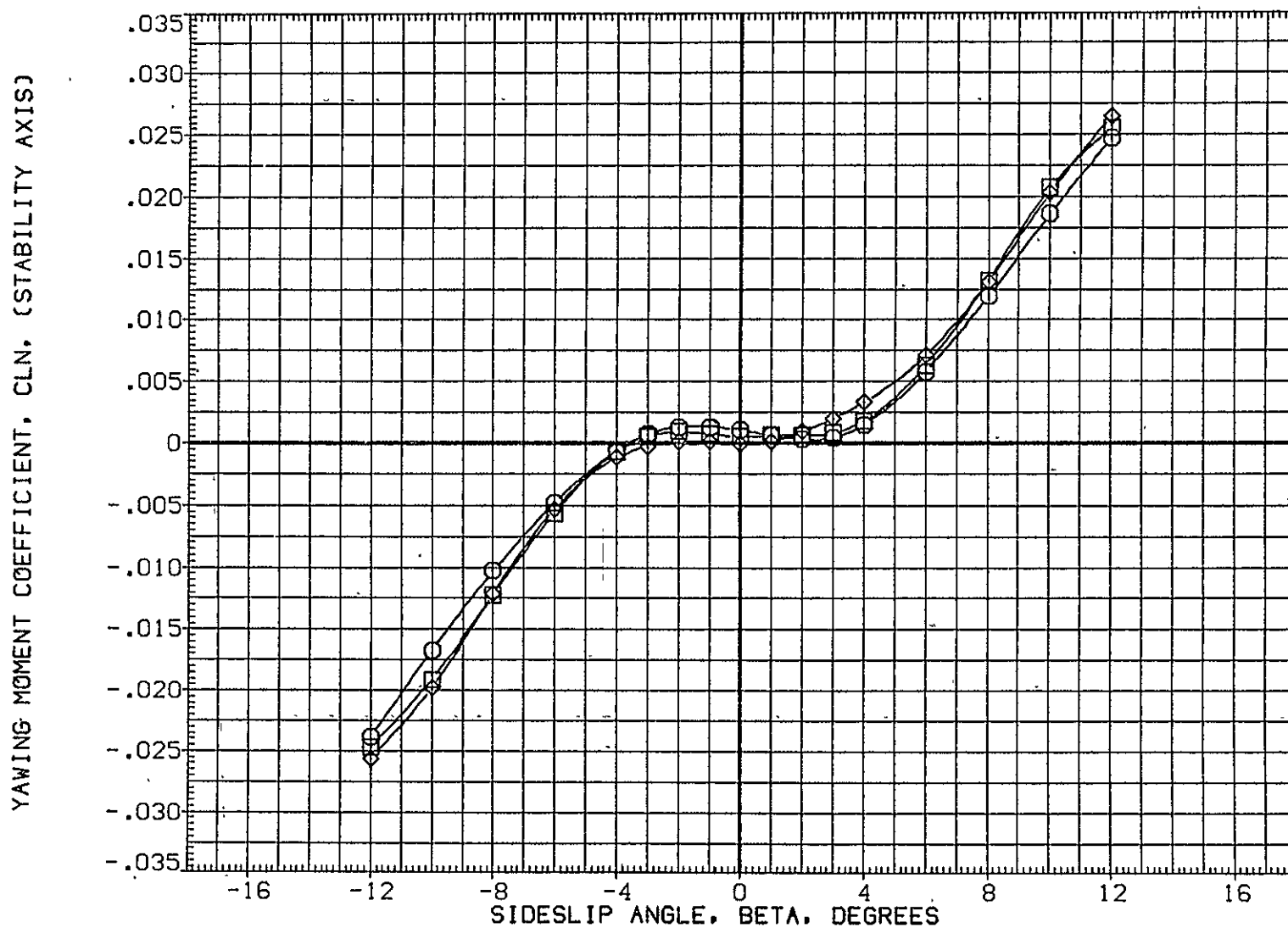


FIG.120 747+ORB(10 DEG)+SP45, FLAPS 20 LAUNCH, ALPHA1= 6 DEG

TOTAL

CA5 K1 F20 H15.1A V9.1 (PLUS. 0RB TC5 AT38.1)(RGM076)

SYMBOL
○
□
◇

MACH

.500
.600
.700

ALPHA I
RUD-U
ELV-1B
S1-2
S5-6

PARAMETRIC VALUES

6.000 STAB 1.000
.000 RUD-L .000
.000 ELV-0B 3.000
45.000 S3-4 45.000
45.000 10RB 9.700

REFERENCE INFORMATION

SREF 5500.0000 SQ.FT.
LREF 327.8000 IN.
BREF 2348.0000 IN.
XMRP 1339.9100 IN. XC
YMRP .0000 IN. YC
ZMRP 190.7500 IN. ZC
SCALE .0300

ROLLING MOMENT COEFFICIENT, CSL (STABILITY AXIS)

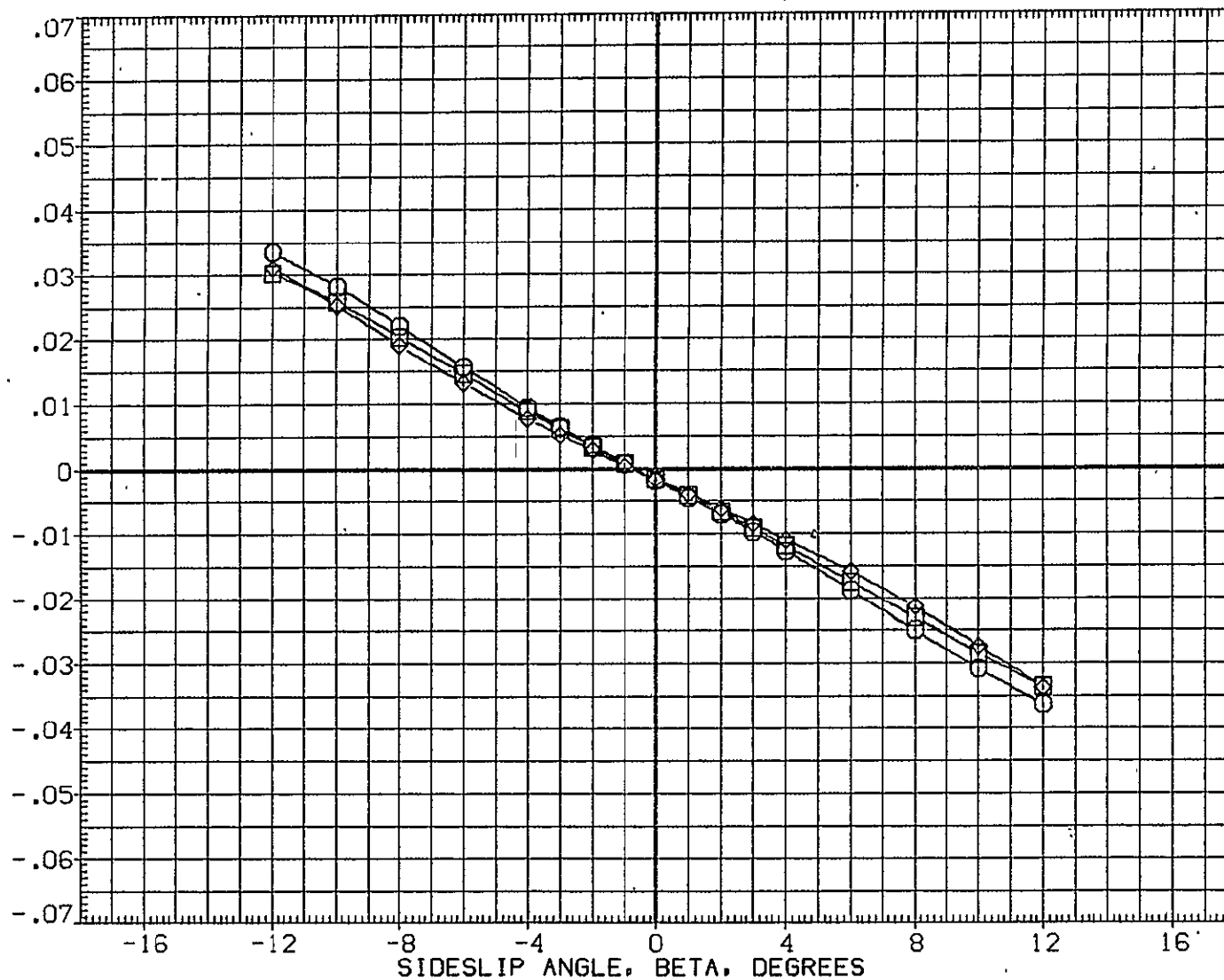


FIG.120 747+0RB(10 DEG)+SP45, FLAPS 20 LAUNCH, ALPHA I= 6 DEG

TOTAL

SYMBOL

○
□
◇

MACH

.500
.600
.700ALPHA1
RUD-U
ELV-18
S1-2
S5-6

PARAMETRIC VALUES

6.000	STAB	1.000
.000	RUD-L	.000
.000	ELV-08	3.000
45.000	S3-4	45.000
45.000	10RB	9.700

REFERENCE INFORMATION

SREF	5500.0000	SQ.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

INCREMENTAL SIDE FORCE COEFFICIENT(STABILITY AXIS), DCY

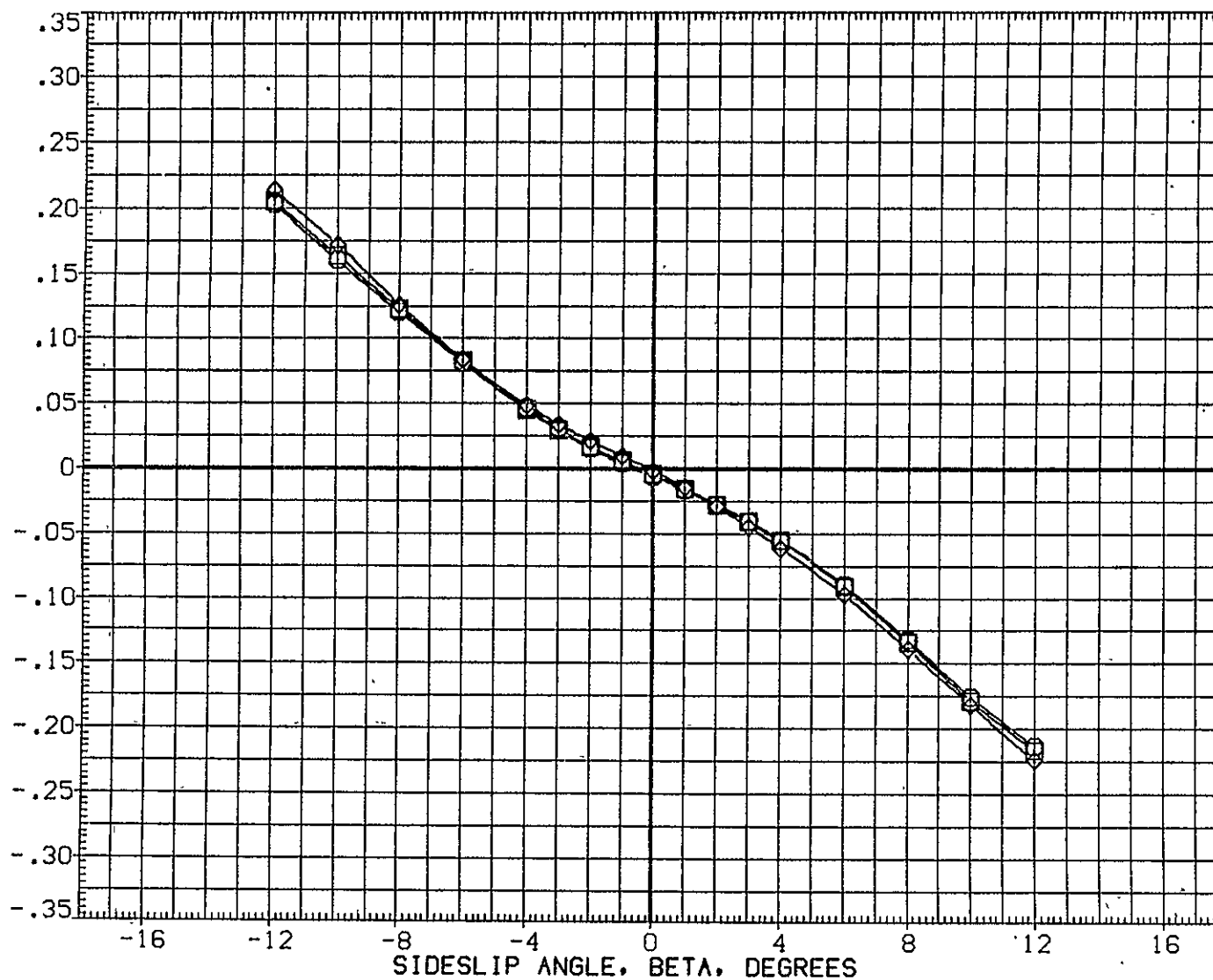


FIG.121 747+0RB(10 DEG)+SP45, FLAPS 20 LAUNCH, ALPHA1= 6 DEG

747

CA5 K1 F20 H15.1A V9.1 MINUS ORB TC5 AT38.1 (BGM076)

SYMBOL

○
□
◇

MACH

.500
.600
.700

ALPHA I
RUD-U
ELV-1B
SI-2
SS-6

PARAMETRIC VALUES

6.000 STAB 1.000
.000 RUD-L .000
.000 ELV-0B 3.000
45.000 S3-4 45.000
45.000 10RB 9.700

REFERENCE INFORMATION

SREF 5500.0000 SQ.FT.
LREF 327.8000 IN.
BREF 2348.0000 IN.
XMRP 1339.9100 IN. XC
YMRP .0000 IN. YC
ZMRP 190.7500 IN. ZC
SCALE .0300

INCREMENTAL YAWING MOMENT COEFFICIENT (STABILITY AXIS), DCLN

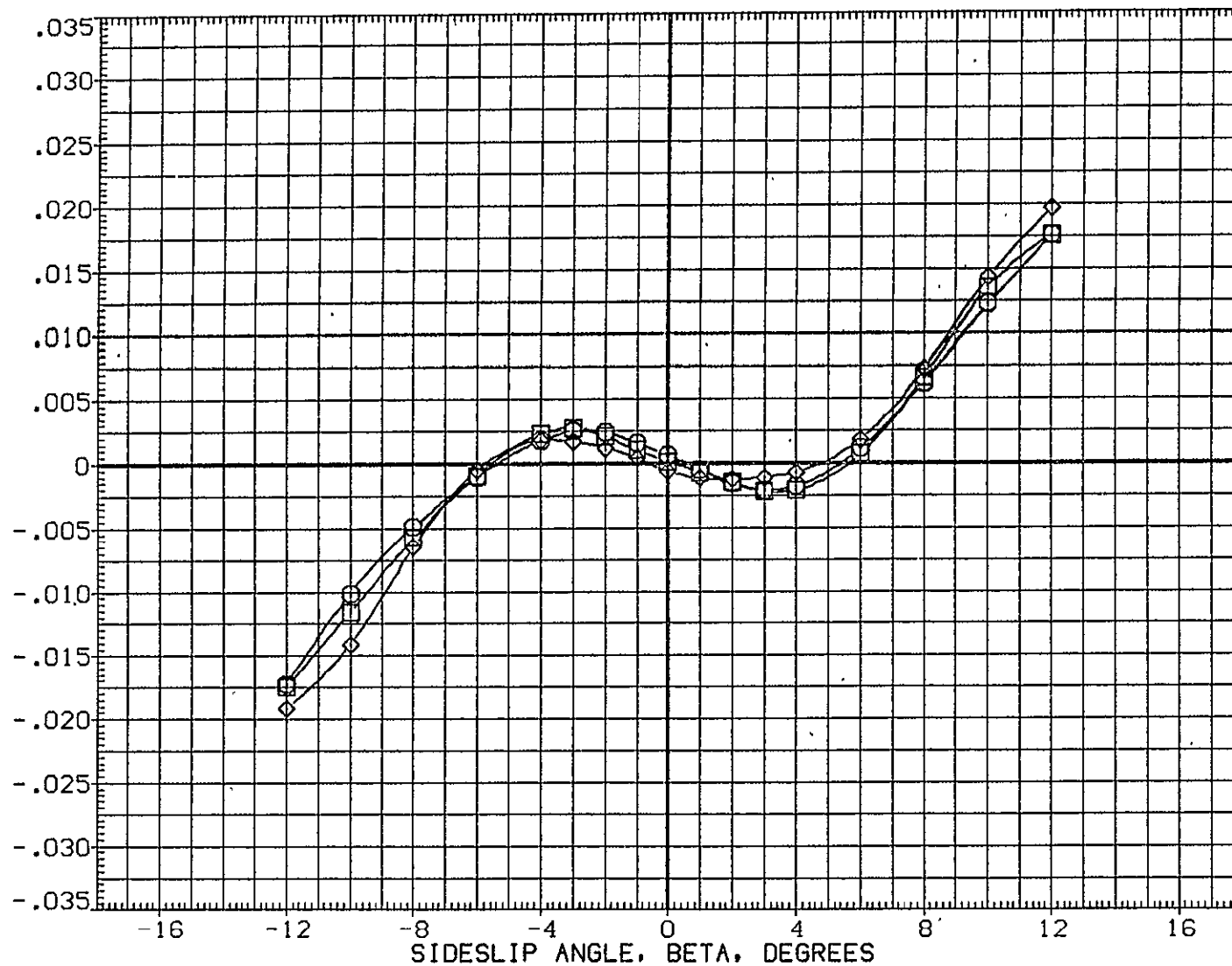


FIG.121 747+ORB(10 DEG)+SP45, FLAPS 20 LAUNCH, ALPHA I= 6 DEG

747

SYMBOL

MACH

PARAMETRIC VALUES

REFERENCE INFORMATION

○
□
◇.500
.600
.700ALPHA I
RUD-U
ELV-1B
S1-2
S5-66.000
.000
.000
45.000
45.000STAB
RUD-L
ELV-0B
S3-4
10RB1.000
.000
3.000
45.000
9.700SREF
LREF
BREF
XMRP
YMRP
ZMRP
SCALE5500.0000
327.8000
2348.0000
1339.9100
.0000
190.7500
.0300SQ.FT.
IN.
IN.
IN. XC
IN. YC
IN. ZC

INCREMENTAL ROLLING MOMENT COEFFICIENT (STABILITY AXIS), DC SL

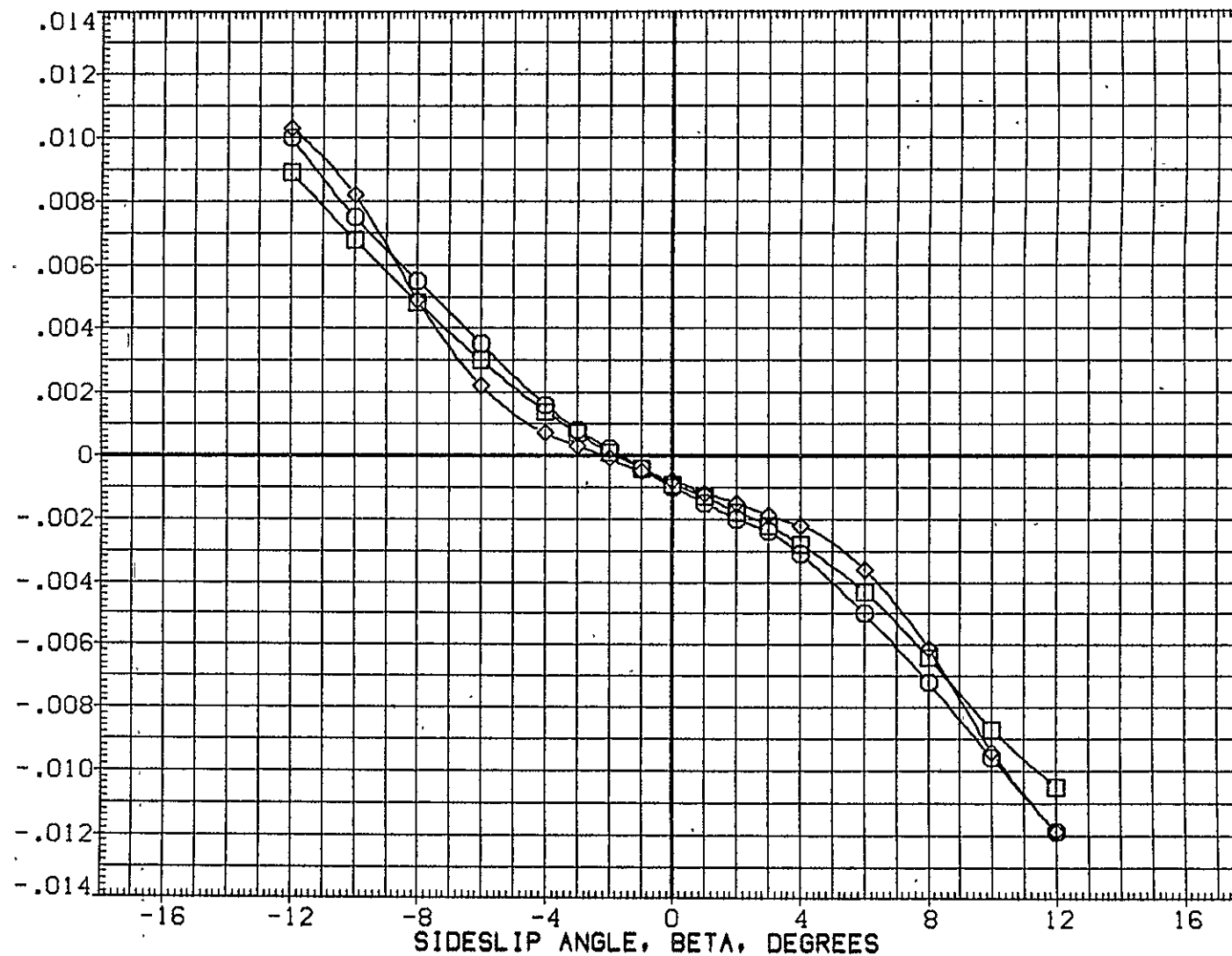


FIG.121 747+0RB(10 DEG)+SP45, FLAPS 20 LAUNCH, ALPHA I= 6 DEG

747

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CA5 0RB TC5 AT38.1 (PRES. K1 F20 H15.1A V9.1)(XGM076)

SYMBOL	MACH	PARAMETRIC VALUES				REFERENCE INFORMATION	
○	.500	ALPHA I	6.000	STAB	1.000	SREF	2690.0000 SQ.FT.
□	.600	RUD-U	.000	RUD-L	.000	LREF	474.8100 IN.
◇	.700	ELV-1B	.000	ELV-0B	3.000	BREF	936.6800 IN.
		S1-2	45.000	S3-4	45.000	XMRP	1109.0000 IN. X0
		S5-6	45.000	I0RB	9.700	YMRP	.0000 IN. Y0
						ZMRP	375.0000 IN. Z0
						SCALE	.0300

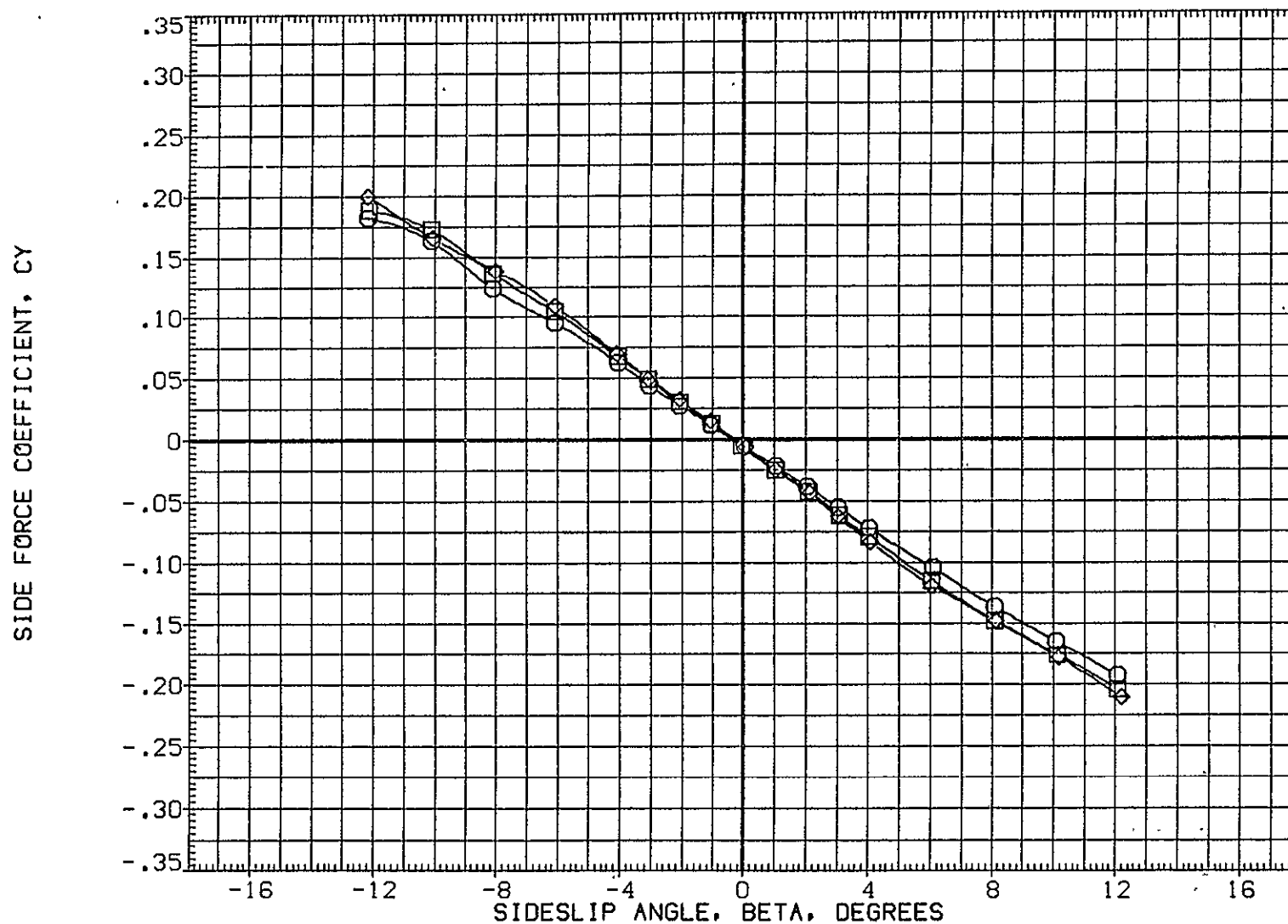


FIG.122 747+0RB(10 DEG)+SP45, FLAPS 20 LAUNCH, ALPHA I= 6 DEG

0RB

SYMBOL	MACH	PARAMETRIC VALUES
○	.500	ALPHA I 6.000 STAB 1.000
□	.600	RUD-U .000 RUD-L .000
◇	.700	ELV-1B .000 ELV-OB 3.000
		S1-2 45.000 S3-4 45.000
		S5-6 45.000 TORB 9.700

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN. X0
YMRP	.0000	IN. Y0
ZMRP	375.0000	IN. Z0
SCALE	.0300	

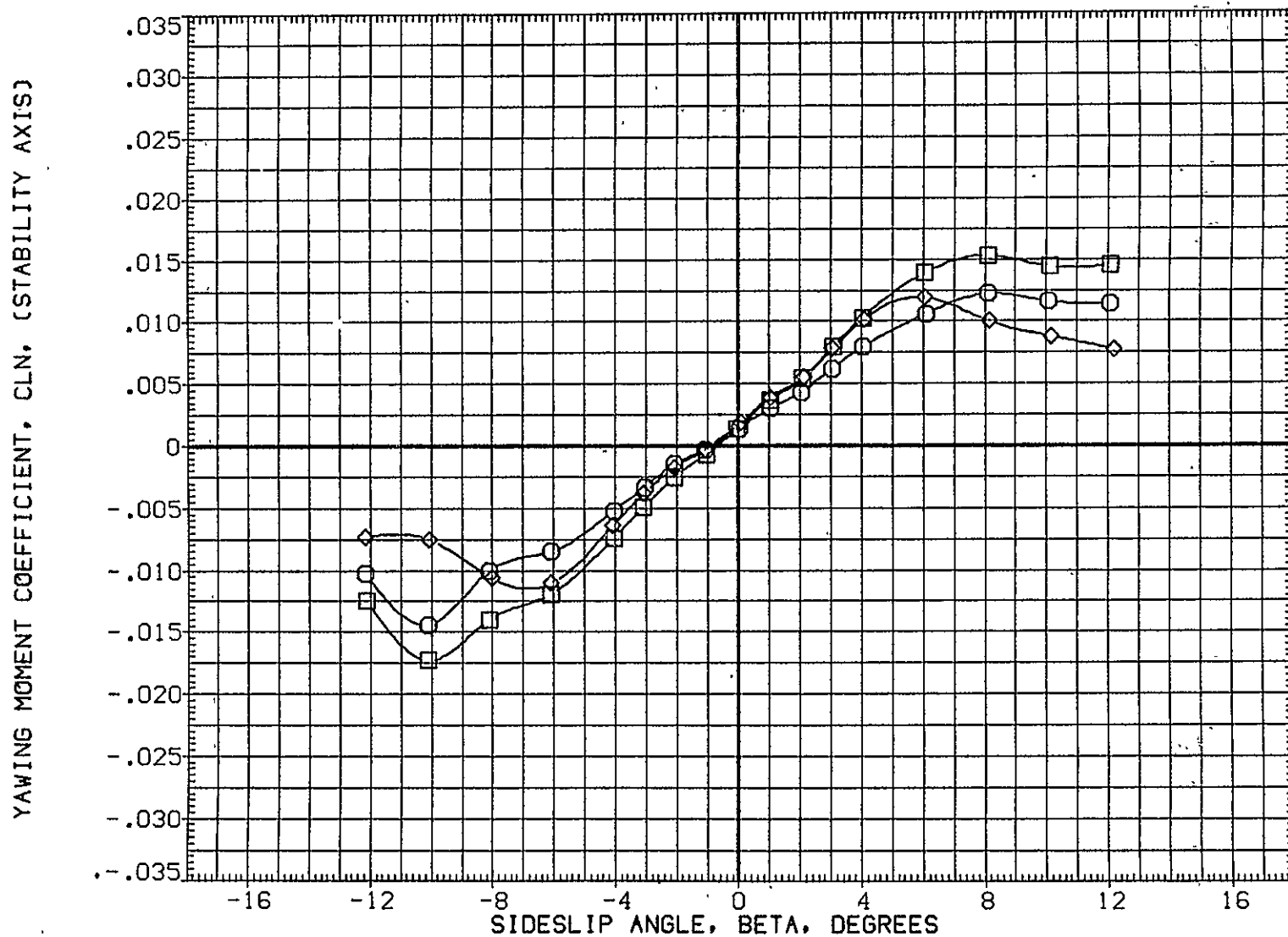


FIG.122 747+ORB(10 DEG)+SP45, FLAPS 20 LAUNCH, ALPHA I= 6 DEG

ORB

CA5 ORB TC5 AT38.1 (PRES. K1 F20 H15.1A V9.1)(XGM076)

SYMBOL	MACH	PARAMETRIC VALUES
○	.500	ALPHA1 6.000 STAB 1.000
□	.600	RUD-U .000 RUD-L .000
◇	.700	ELV-1B .000 ELV-OB 3.000
		S1-2 45.000 S3-4 45.000
		S5-6 45.000 TORB 9.700

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN. X0
YMRP	.0000	IN. Y0
ZMRP	375.0000	IN. Z0
SCALE	.0300	

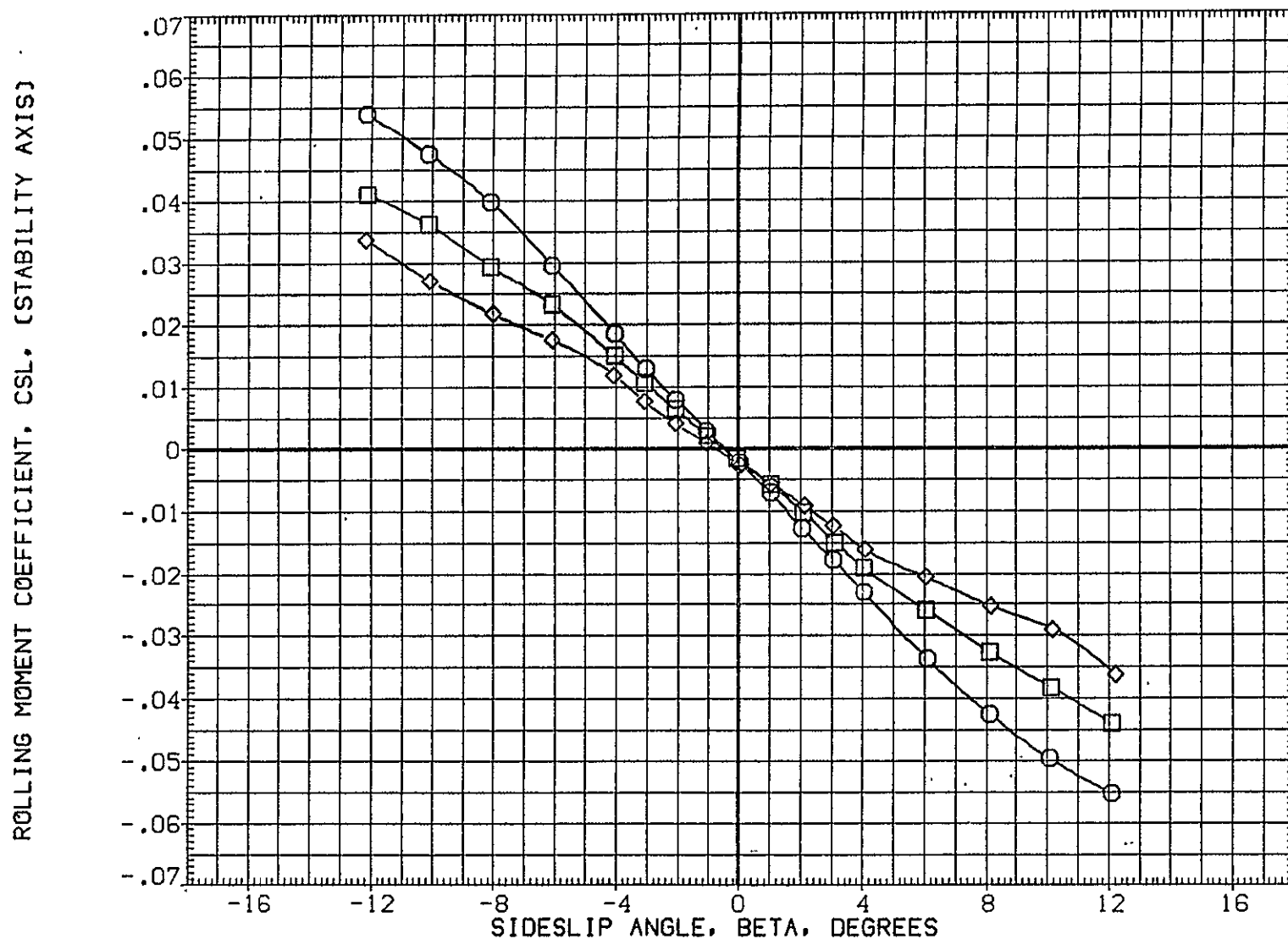


FIG.122 747+ORB(10 DEG)+SP45, FLAPS 20 LAUNCH, ALPHA1= 6 DEG

ORB

SYMBOL	MACH	PARAMETRIC VALUES
○	.500	ALPHA1 6.000 STAB 1.000
□	.600	ELV-1B .000 ELV-0B 3.000
◇	.700	S1-2 45.000 S3-4 45.000
		S5-6 45.000 10RB 9.700

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

SIDE FORCE COEFFICIENT, CY

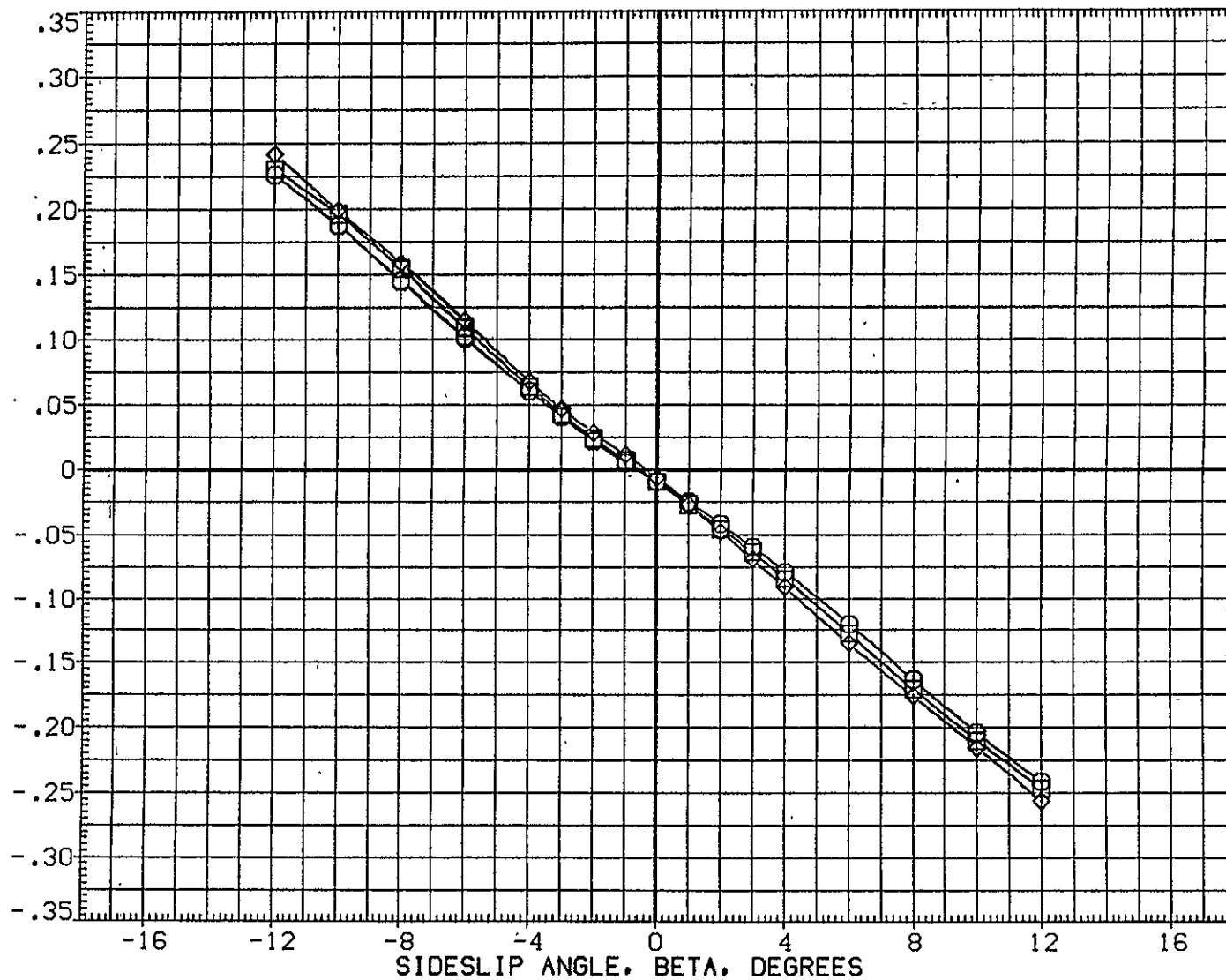


FIG.123 747+0RB(10 DEG)+SP45,VERT TAIL OFF,FLAPS 20 LAUNCH,ALPHA1= 6 DEG TOTAL

CA5 K1 F20 H15.1A

(PLUS, ORB TC5 AT38.1)(RGM078)

SYMBOL	MACH	PARAMETRIC VALUES
○	.500	ALPHA1 6.000 STAB 1.000
□	.600	ELV-1B .000 ELV-0B 3.000
◇	.700	S1-2 45.000 S3-4 45.000
		S5-6 45.000 10RB 9.700

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

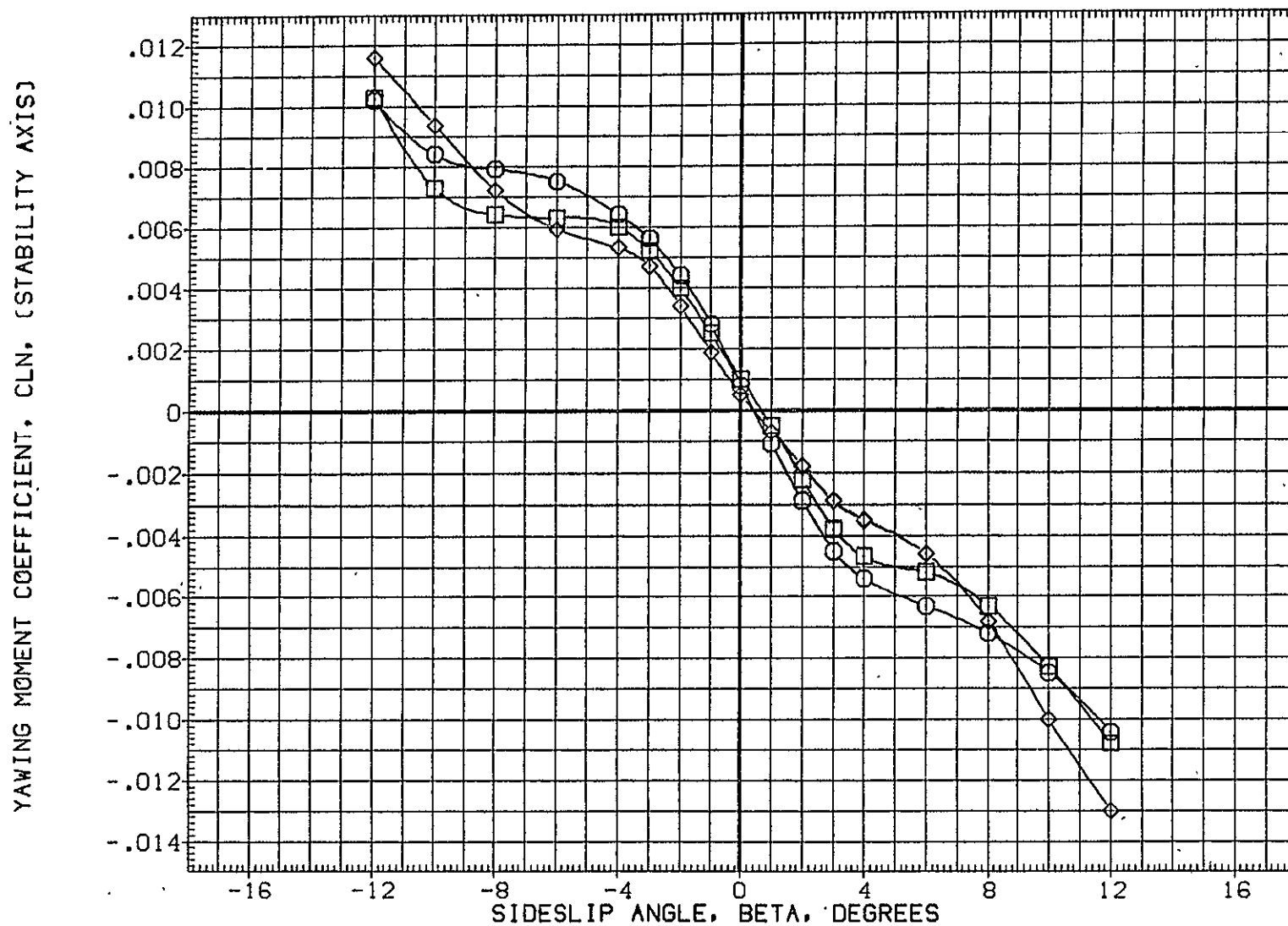


FIG.123 747+0RB(10 DEG)+SP45, VERT TAIL OFF, FLAPS 20 LAUNCH, ALPHA1= 6 DEG TOTAL

CA5 K1 F20 H15.1A

(PLUS. 0RB TC5 AT38.1)(RGM078)

SYMBOL	MACH	PARAMETRIC VALUES
○	.500	ALPHA1 6.000 STAB 1.000
□	.600	ELV-1B .000 ELV-0B 3.000
◇	.700	S1-2 45.000 S3-4 45.000
		S5-6 45.000 10RB 9.700

REFERENCE INFORMATION		
SREF	5500.0000	50.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

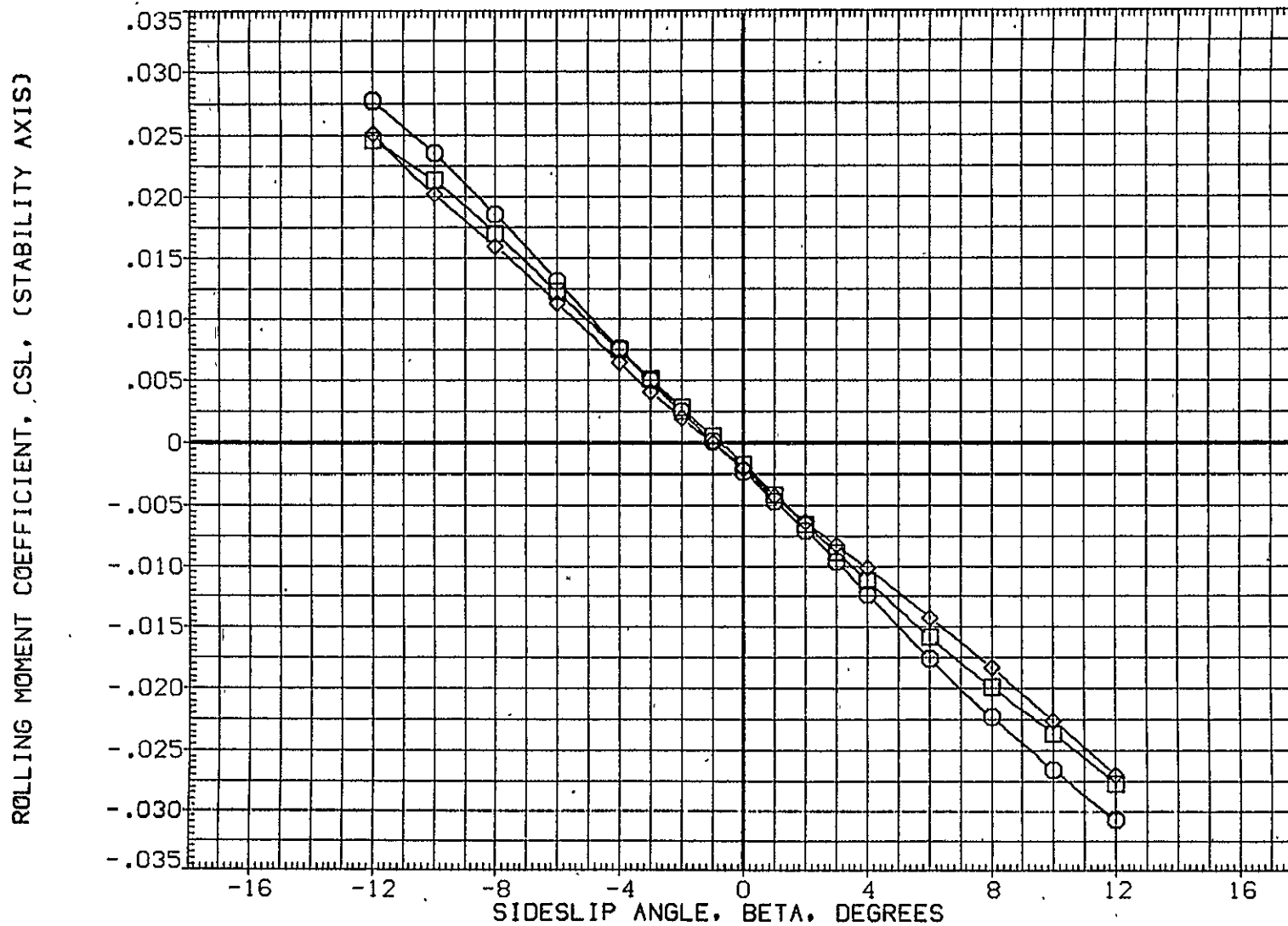


FIG.123 747+0RB(10 DEG)+SP45,VERT TAIL OFF,FLAPS 20 LAUNCH,ALPHA1= 6 DEG TOTAL

CA5 K1 F20 H15.1A

MINUS ORB TC5 AT38.1 (BGM078)

SYMBOL

○
□
◇

MACH

.500
.600
.700

ALPHA I

ELV-1B
S1-2
S5-6

PARAMETRIC VALUES

6.000 STAB 1.000
.000 ELV-0B 3.000
45.000 S3-4 45.000
45.000 10RB 9.700

REFERENCE INFORMATION

SREF	5500.0000	SQ.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

INCREMENTAL SIDE FORCE COEFFICIENT (STABILITY AXIS), DCY

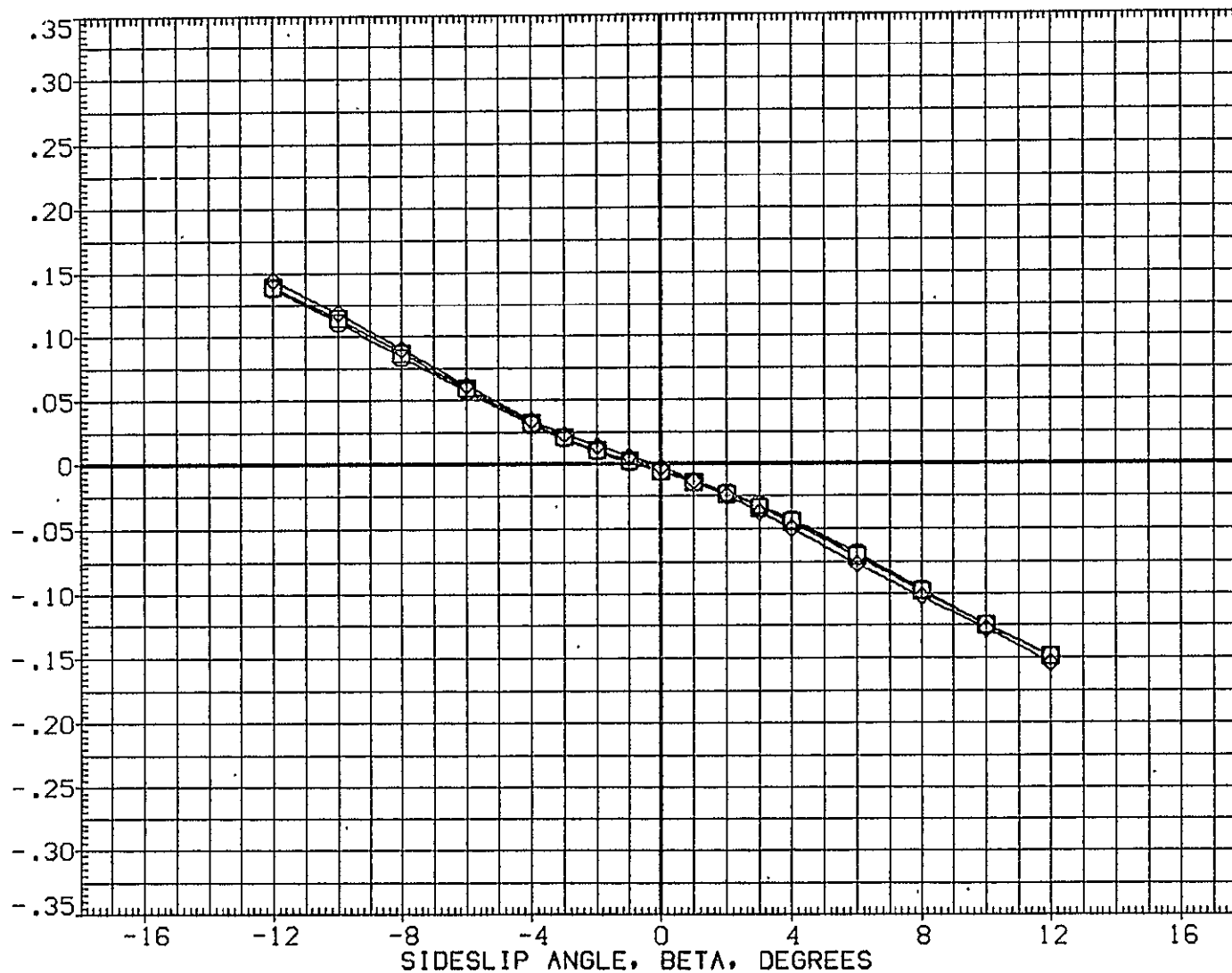


FIG.124 747+ORB(10 DEG)+SP45, VERT TAIL OFF, FLAPS 20 LAUNCH, ALPHA I= 6 DEG 747

SYMBOL

○
□
◇

MACH

ALPHA1

PARAMETRIC VALUES

6.000

STAB

1.000

ELV-1B

.000

ELV-0B

3.000

S1-2

45.000

S3-4

45.000

S5-6

45.000

10RB

9.700

REFERENCE INFORMATION

SREF 5500.0000

50.FT.

LREF 327.8000

IN.

BREF 2348.0000

IN.

XMRP 1339.9100

IN. XC

YMRP .0000

IN. YC

ZMRP 190.7500

IN. ZC

SCALE .0300

INCREMENTAL YAWING MOMENT COEFFICIENT (STABILITY AXIS), DCLN

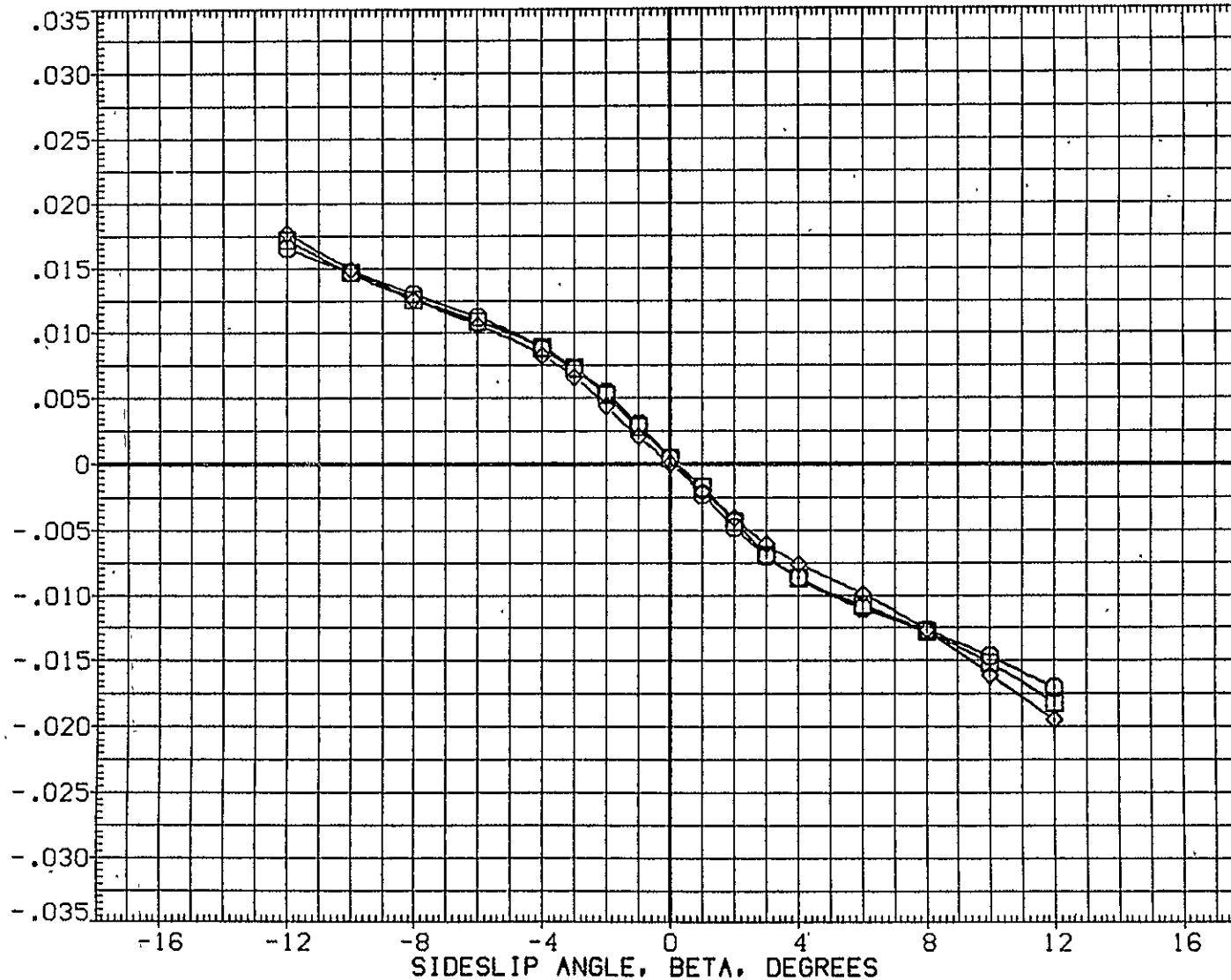


FIG.124 747+0RB(10 DEG)+SP45, VERT TAIL OFF, FLAPS 20 LAUNCH, ALPHA1= 6 DEG

747

PAGE

474

CA5 K1 F20 H15.1A

MINUS ORB TC5 AT38.1 (BGM078)

SYMBOL	MACH	PARAMETRIC VALUES
○	.500	ALPHA1 6.000 STAB 1.000
□	.600	ELV-1B .000 ELV-0B 3.000
◇	.700	S1-2 45.000 S3-4 45.000
		S5-6 45.000 10RB 9.700

REFERENCE INFORMATION

SREF	5500.0000	SQ.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

INCREMENTAL ROLLING MOMENT COEFFICIENT(STABILITY AXIS), DCSL

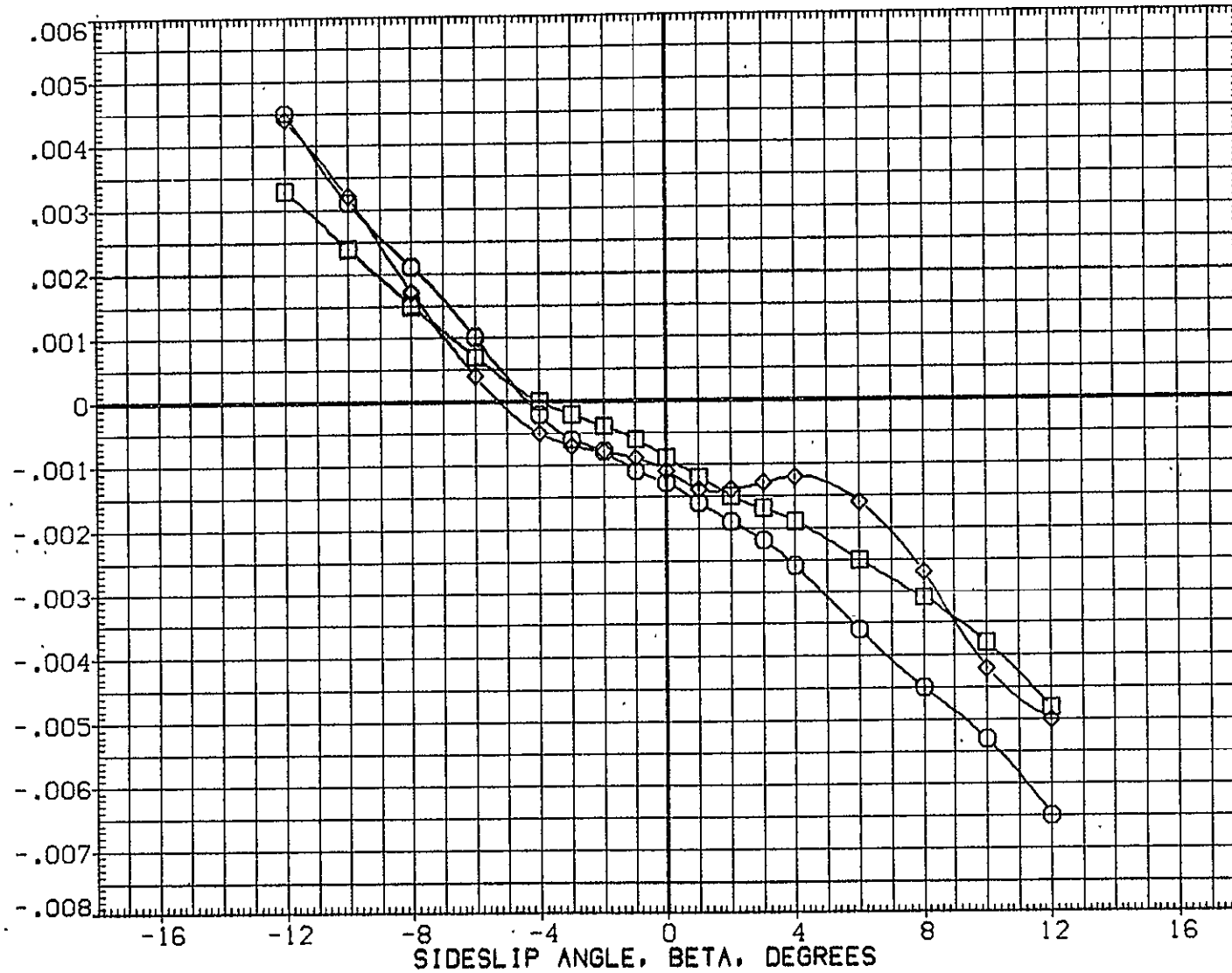


FIG.124 747+ORB(10 DEG)+SP45, VERT TAIL OFF, FLAPS 20 LAUNCH, ALPHA1= 6 DEG

747

SYMBOL	MACH	PARAMETRIC VALUES	REFERENCE INFORMATION
○	.149	ALPHA1 6.000 STAB 1.000	SREF 2690.0000 SQ.FT.
□	.499	ELV-1B .000 ELV-0B 3.000	LREF 474.8100 IN.
◇	.600	S1-2 45.000 S3-4 45.000	BREF 936.6800 IN.
△	.701	S5-6 45.000 IORB 9.700	XMRF 1109.0000 IN. X0
			YMRF .0000 IN. Y0
			ZMRF 375.0000 IN. Z0
			SCALE .0300

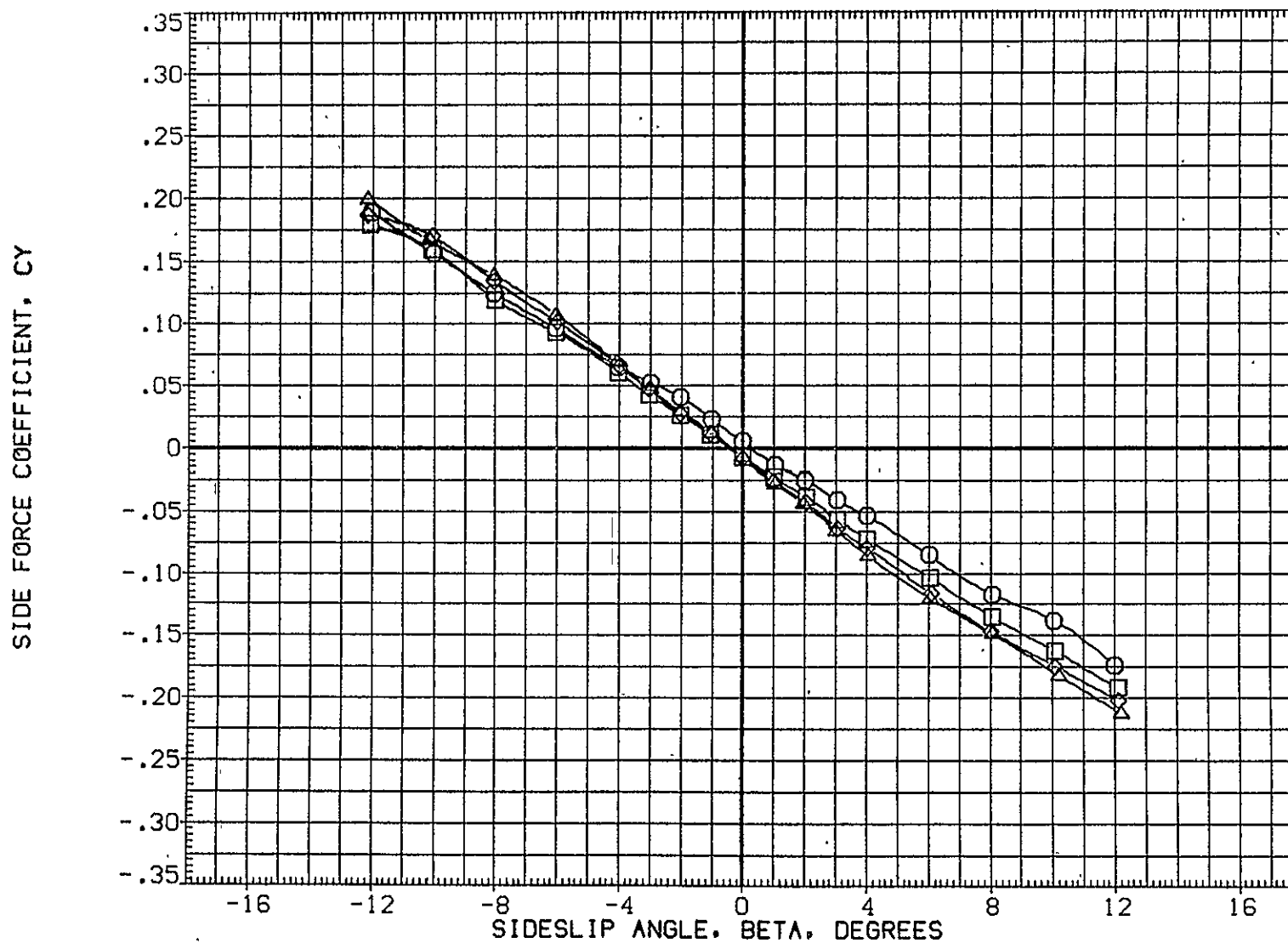


FIG.125 747+ORB(10 DEG)+SP45, VERT TAIL OFF, FLAPS 20 LAUNCH, ALPHA1= 6 DEG ORB

CA5 ORB TC5 AT38.1 (PRES. K1 F20 H15.1A)(XGM078)

SYMBOL	MACH	PARAMETRIC VALUES
○	.149	ALPHA1 6.000 STAB 1.000
□	.499	ELV-1B .000 ELV-0B 3.000
◇	.600	S1-2 45.000 S3-4 45.000
△	.701	S5-6 45.000 ICRB 9.700

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN. X0
YMRP	.0000	IN. Y0
ZMRP	375.0000	IN. Z0
SCALE	.0300	

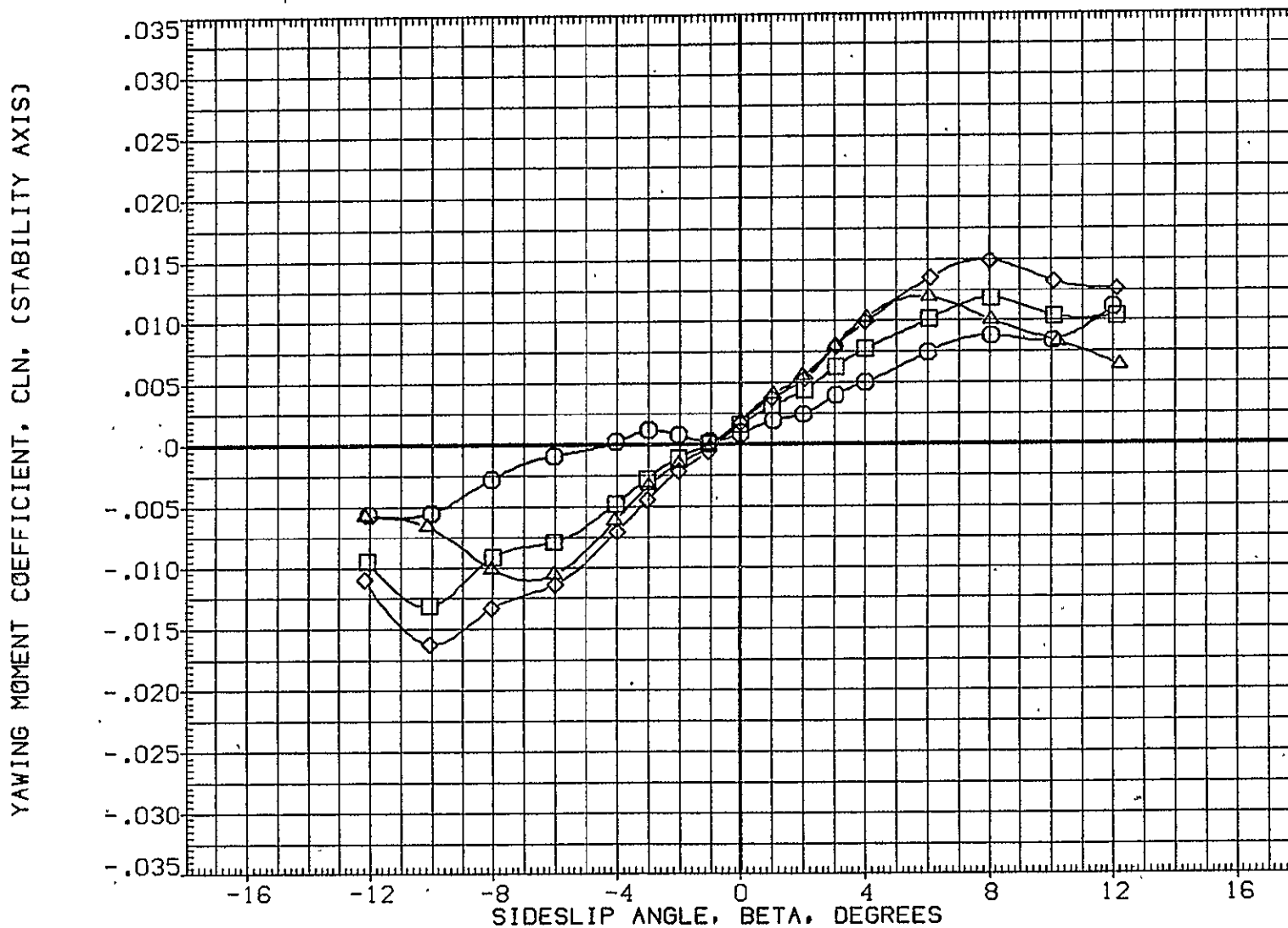


FIG.125 747+ORB(10 DEG)+SP45,VERT TAIL OFF,FLAPS 20 LAUNCH,ALPHA1= 6 DEG ORB

SYMBOL	MACH	PARAMETRIC VALUES
○	.149	ALPHA1 6.000 STAB 1.000
□	.499	ELV-1B .000 ELV-0B 3.000
◇	.600	S1-2 45.000 S3-4 45.000
△	.701	S5-6 45.000 10RB 9.700

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN. X0
YMRP	.0000	IN. Y0
ZMRP	375.0000	IN. Z0
SCALE	.0300	

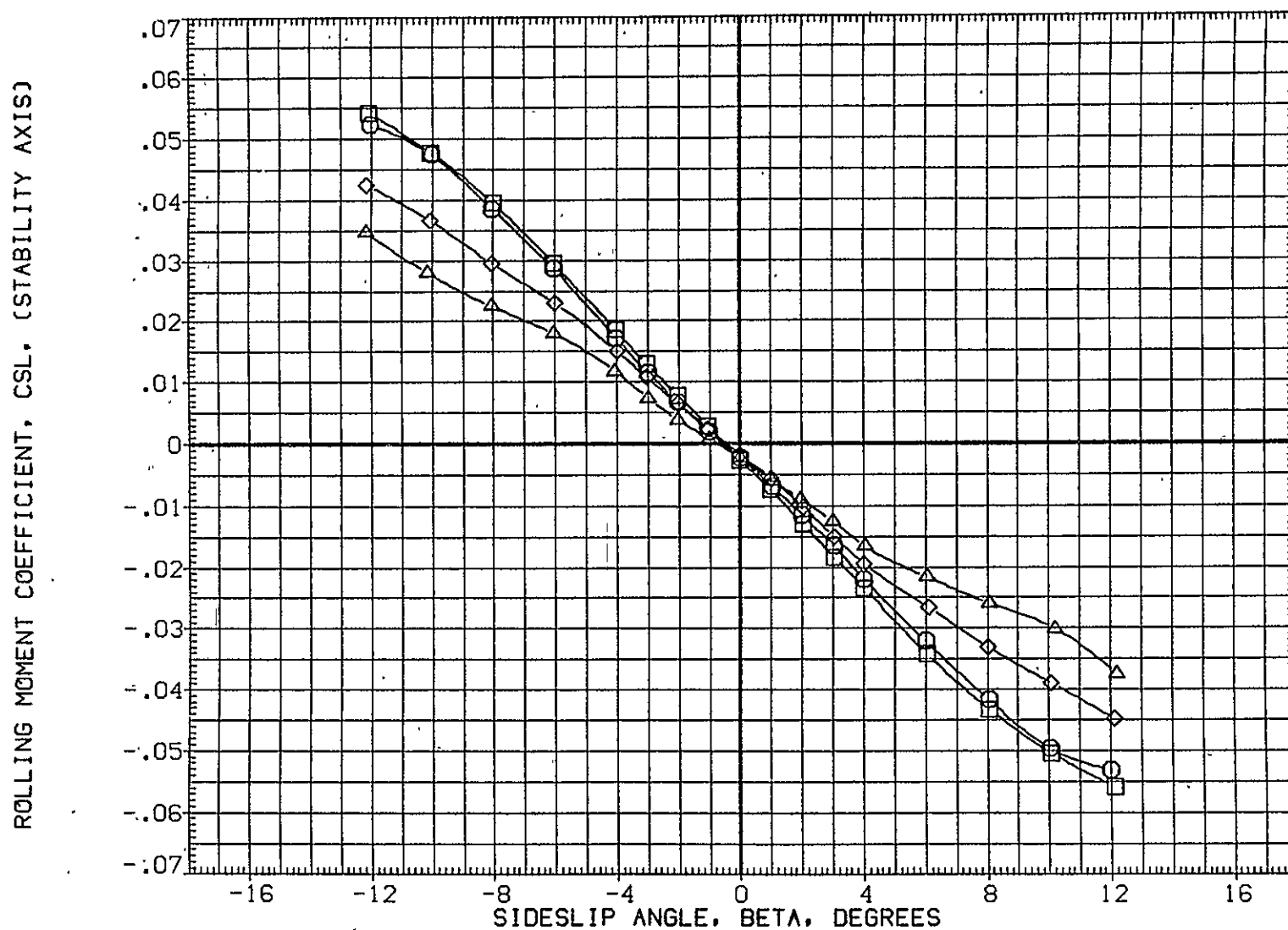


FIG.125 747+ORB(10 DEG)+SP45,VERT TAIL OFF,FLAPS 20 LAUNCH,ALPHA1= 6 DEG ORB

CA5 K1 F20 H15.6 V9.1 (PLUS. ORB TC5 AT38.2)(RGM079)

SYMBOL	MACH	PARAMETRIC VALUES				REFERENCE INFORMATION	
○	.500	ALPHA I	6.000	STAB	1.000	SREF	5500.0000 SQ.FT.
□	.600	RUD-U	.000	RUD-L	.000	LREF	327.6000 IN.
◇	.700	ELV-IB	.000	ELV-OB	3.000	BREF	2348.0000 IN.
		S1-2	45.000	S3-4	45.000	XMRP	1339.9100 IN. XC
		S5-6	45.000	IORB	7.850	YMRP	.0000 IN. YC
						ZMRP	190.7500 IN. ZC
						SCALE	.0300

SIDE FORCE COEFFICIENT, CY

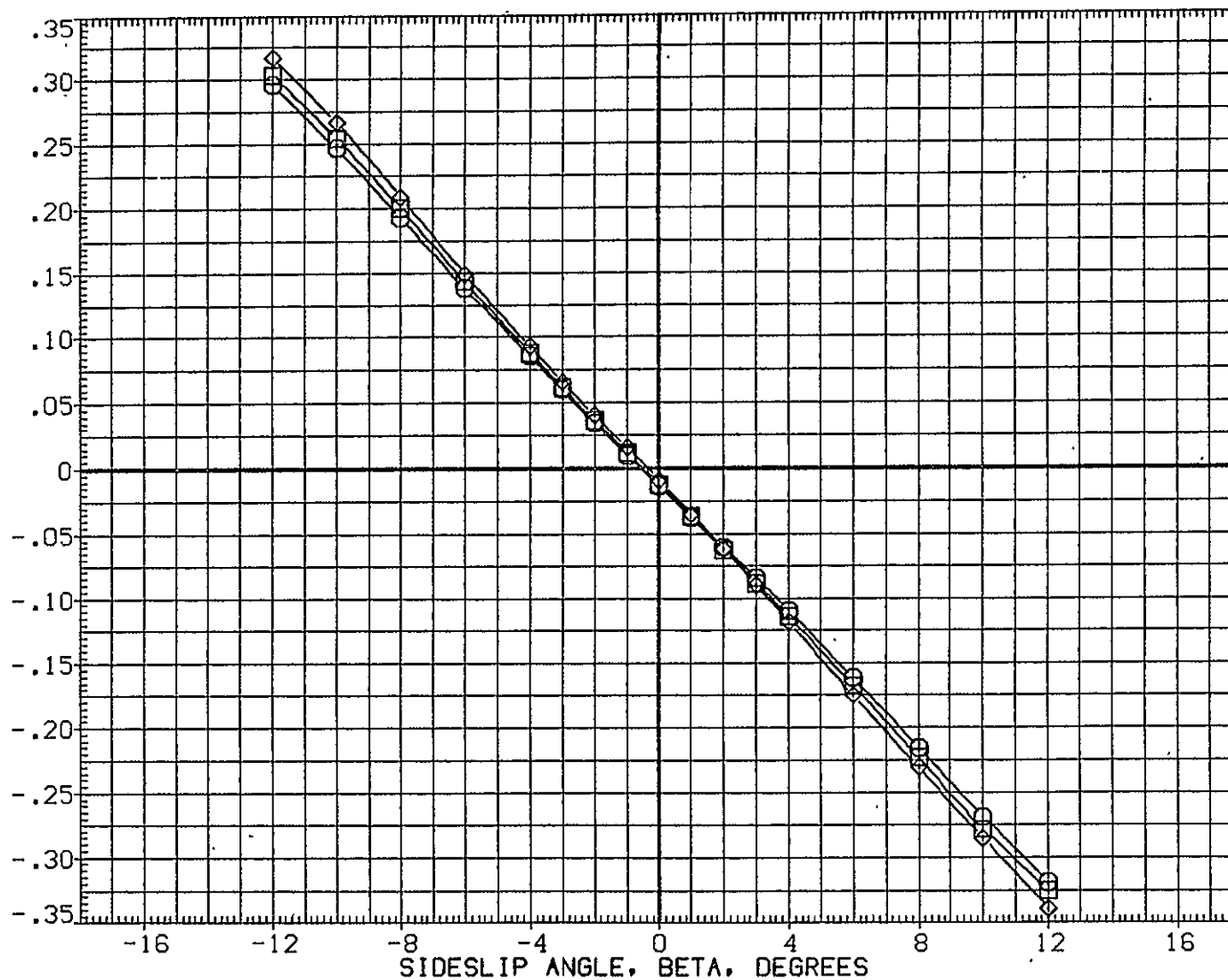


FIG.126 747+ORB(8 DEG)+TIP FINS+SP45,FLAPS 20 LAUNCH,ALPHA I= 6 DEG

TOTAL

SYMBOL	MACH	PARAMETRIC VALUES	REFERENCE INFORMATION
○	.500	ALPHA1 6.000 STAB 1.000	SREF 5500.0000 SQ.FT.
□	.600	RUD-U .000 RUD-L .000	LREF 327.8000 IN.
◇	.700	ELV-1B .000 ELV-OB 3.000	BREF 2348.0000 IN.
		S1-2 45.000 S3-4 45.000	XMRP 1339.9100 IN. XC
		S5-6 45.000 TORB 7.850	YMRP .0000 IN. YC
			ZMRP 190.7500 IN. ZC
			SCALE .0300

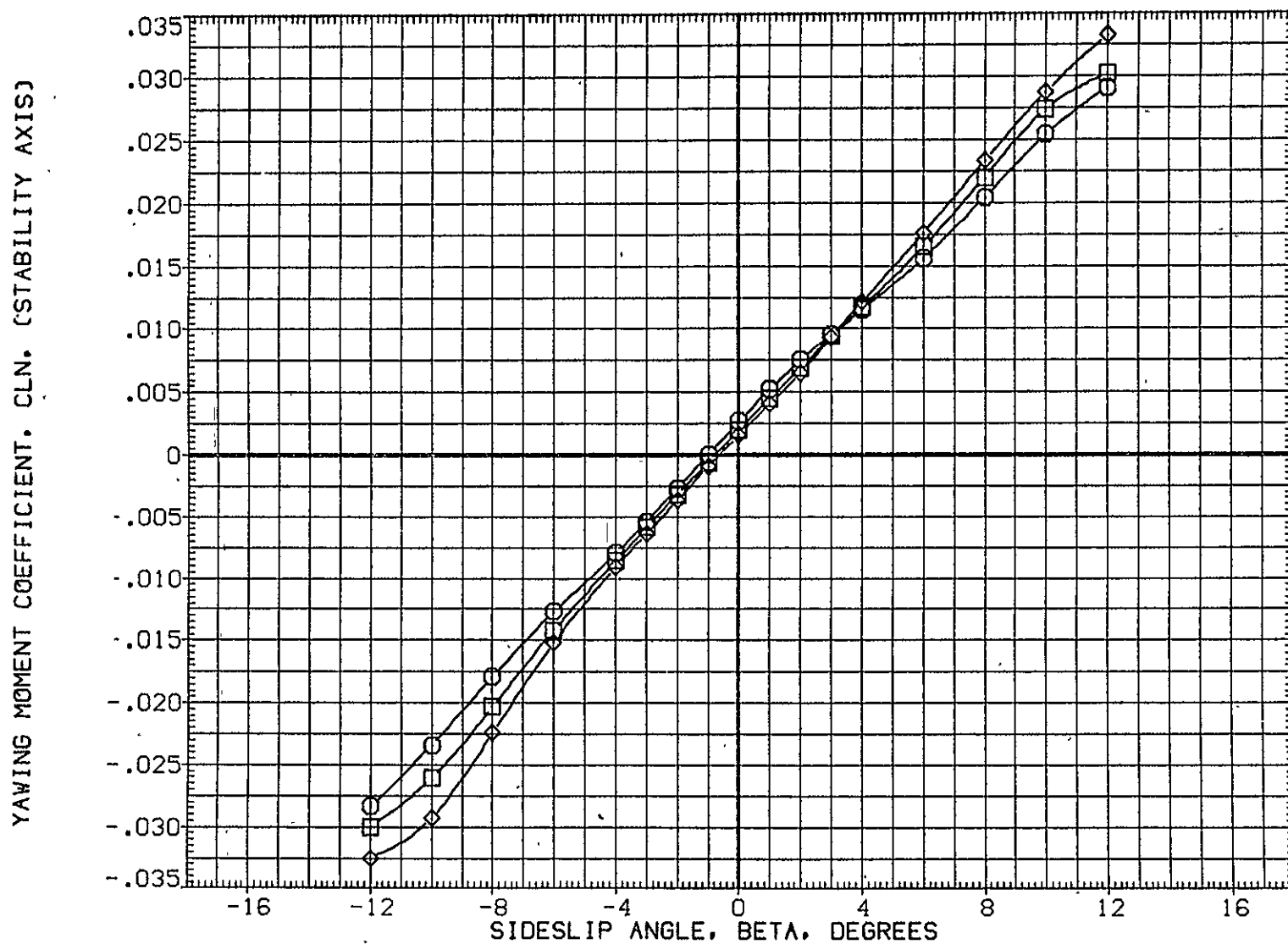


FIG.126 747+ORB(8 DEG)+TIP FINS+SP45,FLAPS 20 LAUNCH,ALPHA1= 6 DEG

TOTAL

CA5 K1 F20 H15,6 V9.1 (PLUS. ORB TC5 AT38.2)(R6M079)

SYMBOL	MACH	PARAMETRIC VALUES	REFERENCE INFORMATION
○	.500	ALPHA I 6.000 STAB 1.000	SREF 5500.0000 SQ.FT.
□	.600	RUD-U .000 RUD-L .000	LREF 327.8000 IN.
◇	.700	ELV-1B .000 ELV-OB 3.000	BREF 2348.0000 IN.
		S1-2 45.000 S3-4 45.000	XMRP 1339.9100 IN. XC
		S5-6 45.000 IORB 7.850	YMRP .0000 IN. YC
			ZMRP 190.7500 IN. ZC
			SCALE .0300

ROLLING MOMENT COEFFICIENT, CSL, (STABILITY AXIS)

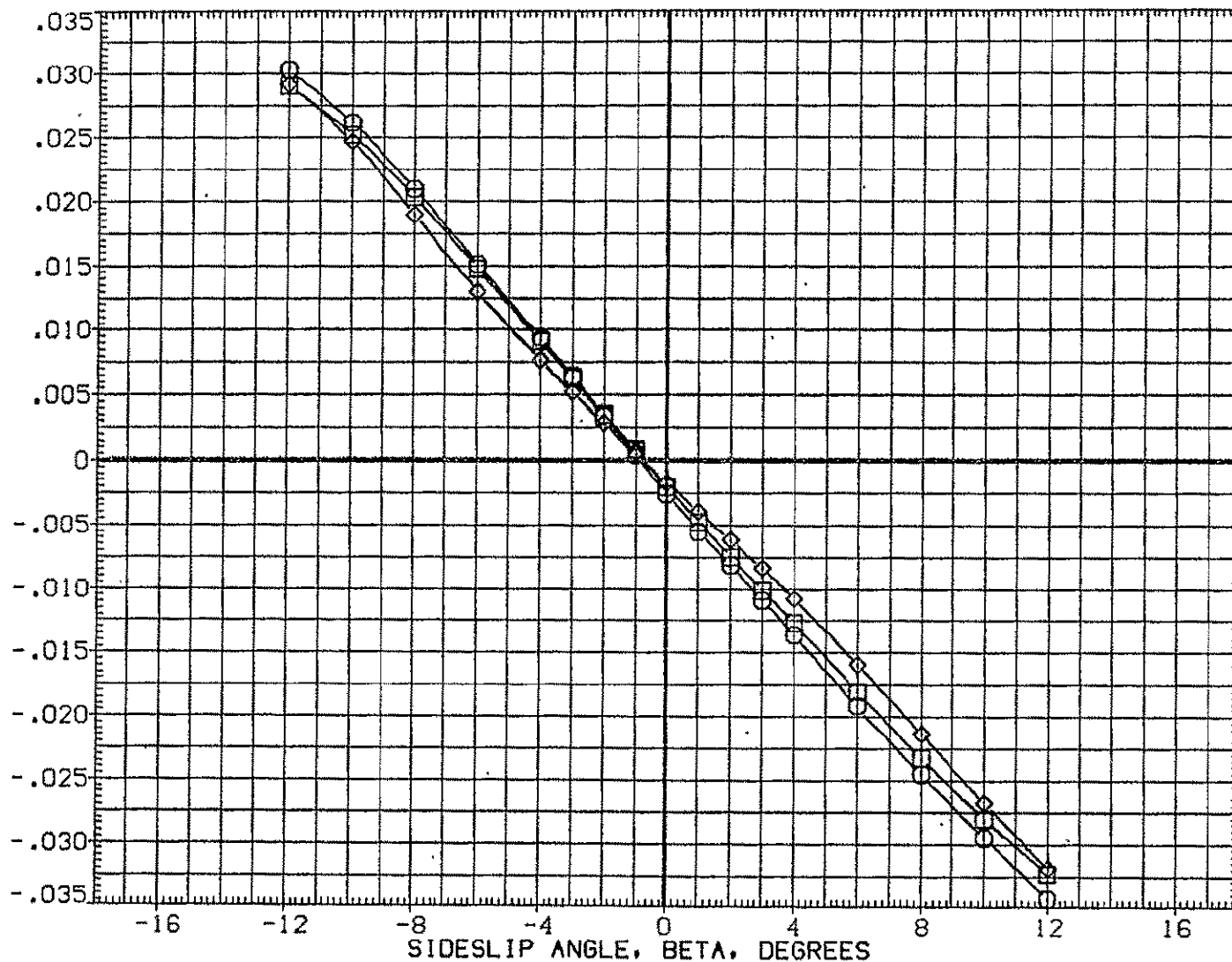


FIG.126 747+ORB(8 DEG)+TIP FINS+SP45,FLAPS 20 LAUNCH,ALPHA I= 6 DEG

TOTAL

SYMBOL

○
□
◇

MACH

PARAMETRIC VALUES

.500	ALPHA1	6.000	STAB	1.000
.600	RUD-U	.000	RUD-L	.000
.700	ELV-1B	.000	ELV-0B	3.000
	S1-2	45.000	S3-4	45.000
	S5-6	45.000	10RB	7.850

REFERENCE INFORMATION

SREF	5500.0000	SQ.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

INCREMENTAL SIDE FORCE COEFFICIENT(STABILITY AXIS), DCY

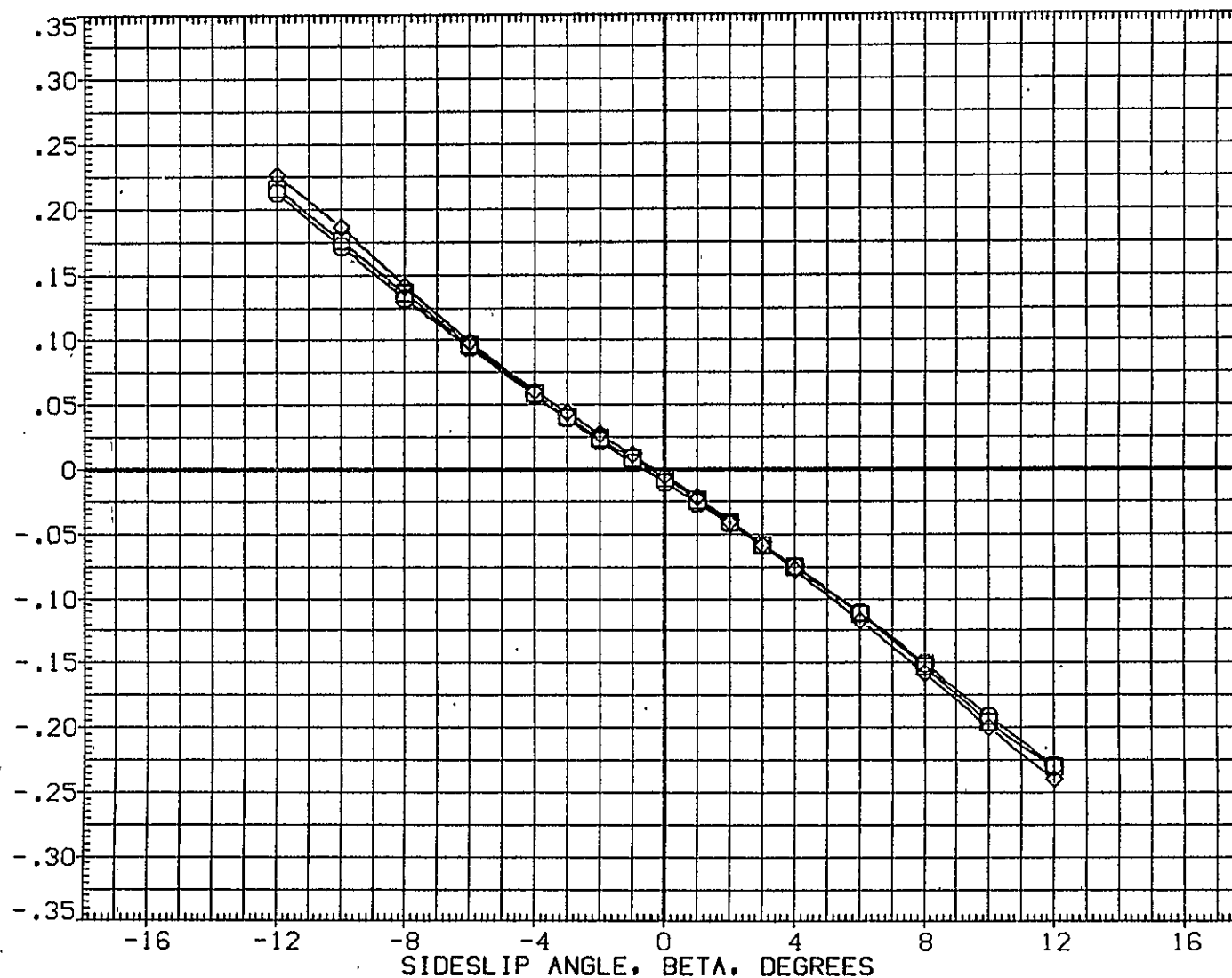


FIG.127 747+ORB(8 DEG)+TIP FINS+SP45,FLAPS 20 LAUNCH,ALPHA1= 6 DEG

747

CA5 K1 F20 H15.6 V9.1 MINUS ORB TC5 AT38.2 (BGM079)

SYMBOL
○
□
◇

MACH
.500
.600
.700

ALPHA1
RUD-U
ELV-1B
S1-2
S5-6

PARAMETRIC VALUES
6.000 STAB
.000 RUD-L
.000 ELV-0B
45.000 S3-4
45.000 10RB

1.000
.000
3.000
45.000
7.850

REFERENCE INFORMATION

SREF	5500.0000	SQ.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

INCREMENTAL YAWING MOMENT COEFFICIENT(STABILITY AXIS), DCLN

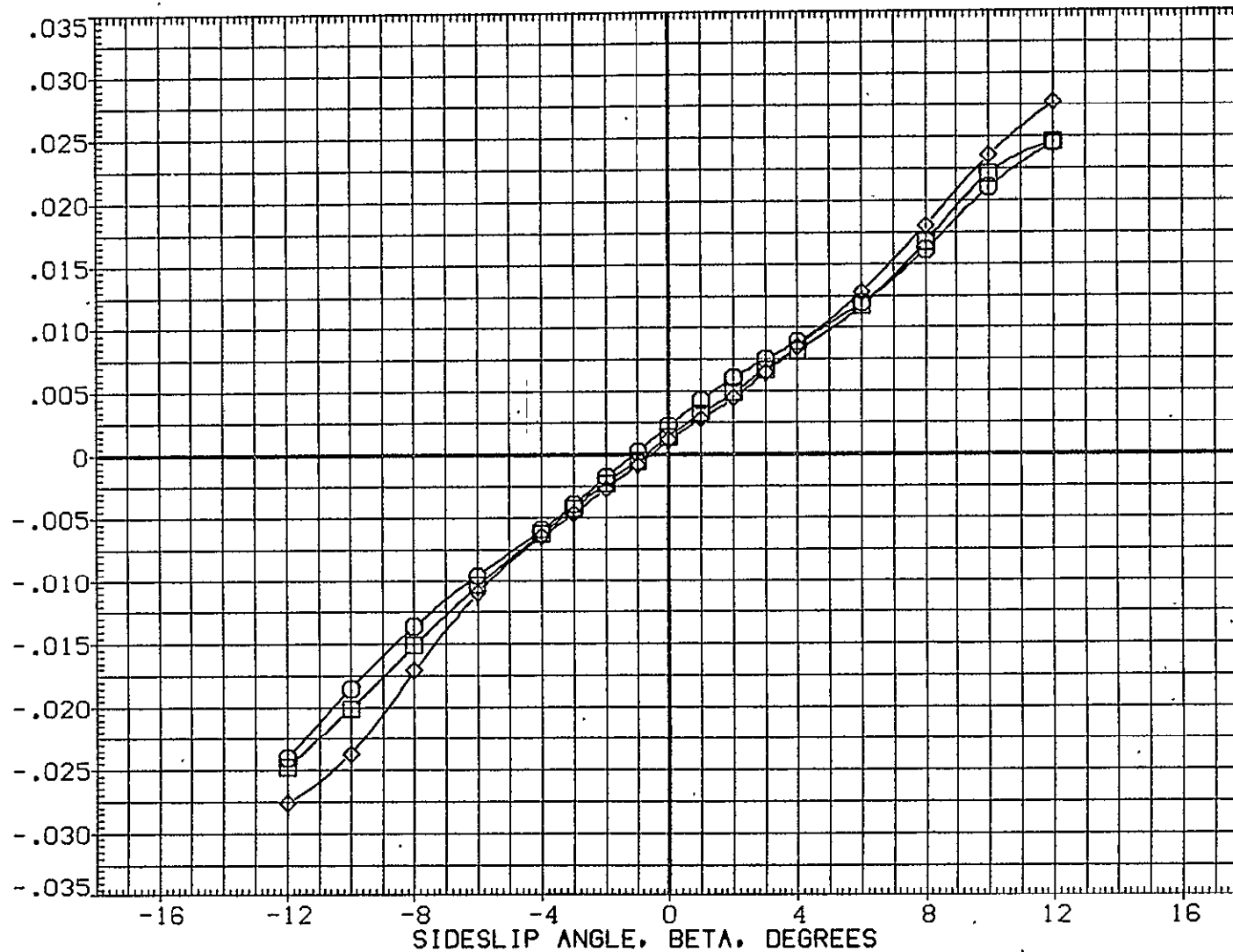


FIG:127 747+0RB(8 DEG)+TIP FINS+SP45,FLAPS 20 LAUNCH,ALPHA1= 6 DEG

747

SYMBOL	MACH	PARAMETRIC VALUES				REFERENCE INFORMATION		
◇	.500	ALPHA I	6.000	STAB	1.000	SREF	5500.0000	SG.FT.
□	.600	RUD-U	.000	RUD-L	.000	LREF	327.8000	IN.
○	.700	ELV-18	.000	ELV-08	3.000	BREF	2348.0000	IN.
		S1-2	45.000	S3-4	45.000	XMRP	1339.9100	IN. XC
		S5-6	45.000	ICRB	7.850	YMRP	.0000	IN. YC
						ZMRP	190.7500	IN. ZC
						SCALE	.0300	

INCREMENTAL ROLLING MOMENT COEFFICIENT(STABILITY AXIS), DCSL

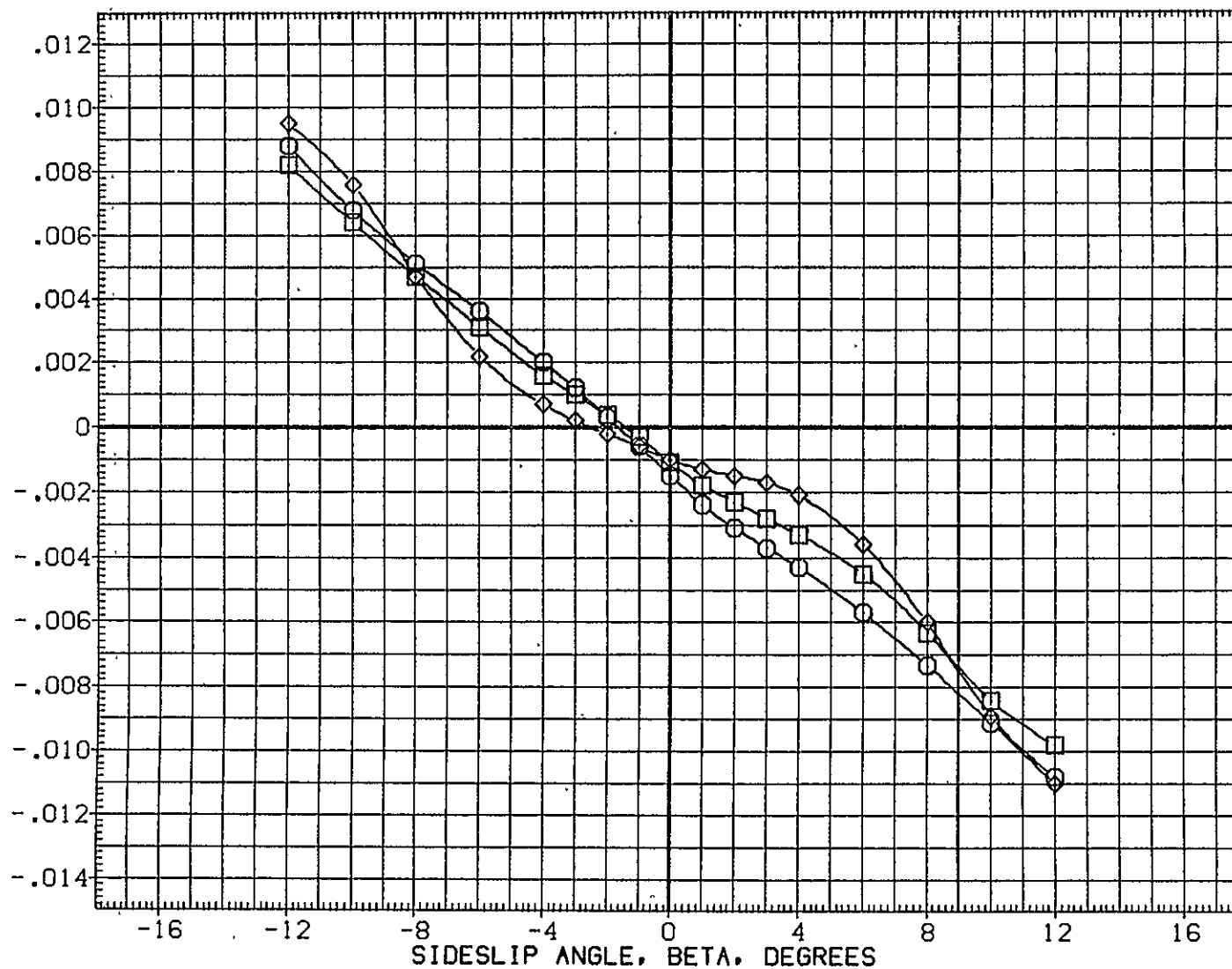


FIG.127 747+0RB(8 DEG)+TIP FINS+SP45,FLAPS 20 LAUNCH,ALPHA I= 6 DEG

747

CA5 0RB TC5 AT38.2 (PRES. K1 F20 H15.6 V9.1)(XGM079)

SYMBOL
○
□
◇

MACH

.499
.600
.700

ALPHA1
RUD-U
ELV-1B
S1-2
SS-6

PARAMETRIC VALUES

6.000 STAB 1.000
.000 RUD-L .000
.000 ELV-0B 3.000
45.000 S3-4 45.000
45.000 10RB 7.850

REFERENCE INFORMATION

SREF 2690.0000 SQ.FT.
LREF 474.8100 IN.
BREF 936.6800 IN.
XMRP 1109.0000 IN. X0
YMRP .0000 IN. Y0
ZMRP 375.0000 IN. Z0
SCALE .0300

SIDE FORCE COEFFICIENT, CY

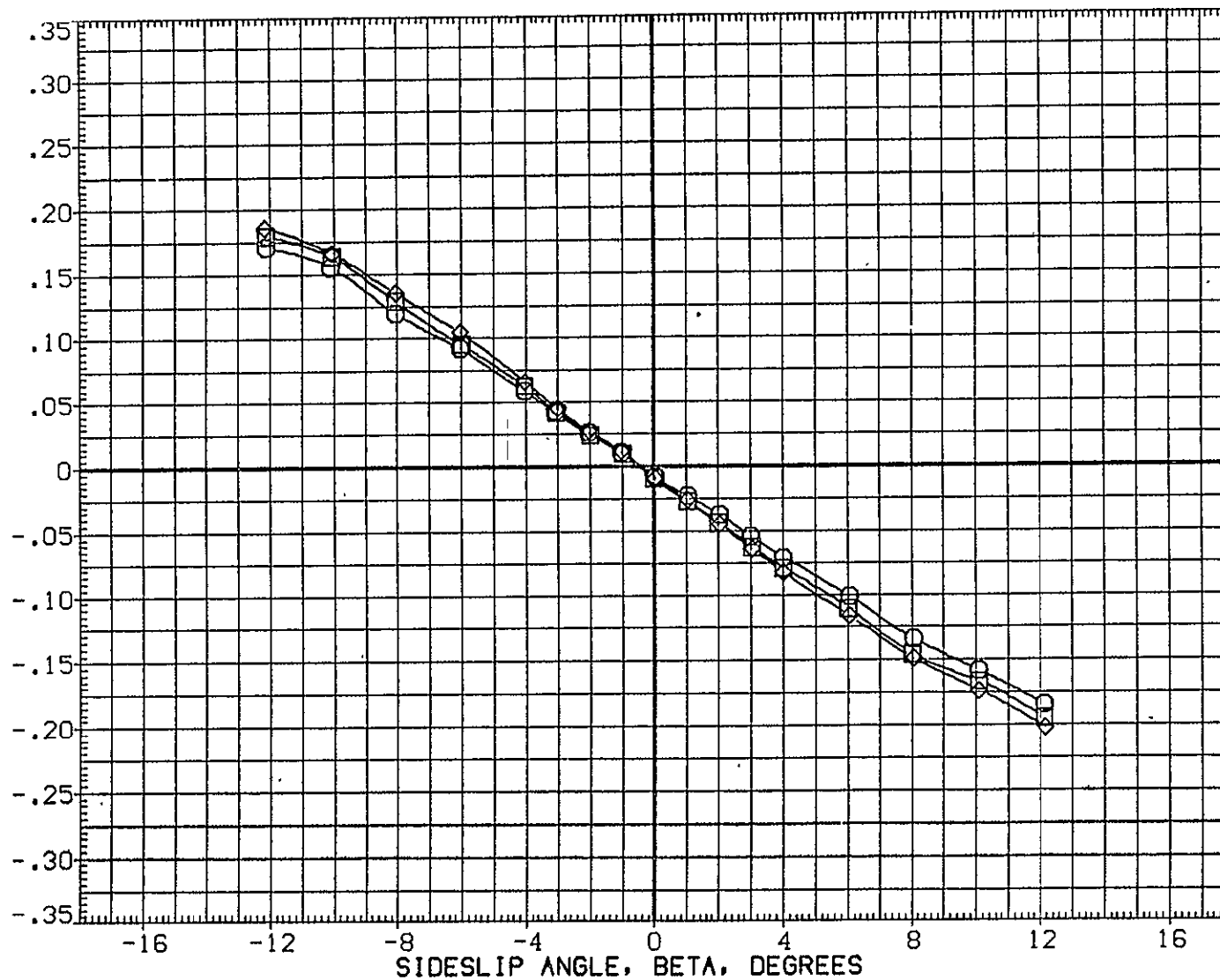


FIG.128 747+0RB(8 DEG)+TIP FINS+SP45,FLAPS 20 LAUNCH,ALPHA1= 6 DEG

0RB

SYMBOL	MACH	PARAMETRIC VALUES
○	.499	ALPHA1 6.000 STAB 1.000
□	.600	RUD-U .000 RUD-L .000
◇	.700	ELV-1B .000 ELV-OB 3.000
		S1-2 45.000 S3-4 45.000
		S5-6 45.000 IORB 7.850

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN. X0
YMRP	.0000	IN. Y0
ZMRP	375.0000	IN. Z0
SCALE	.0300	

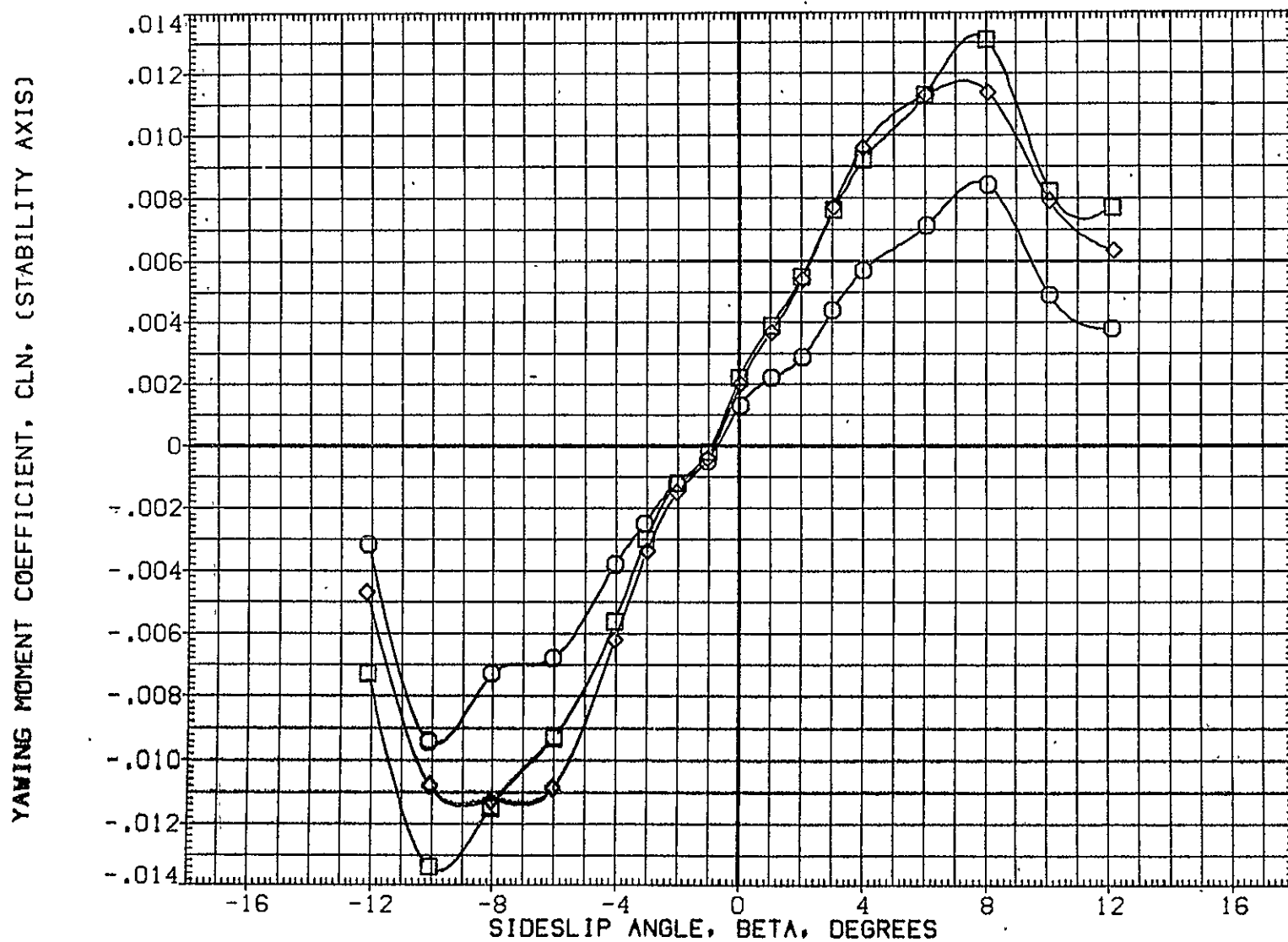


FIG.128 747+ORB(8 DEG)+TIP FINS+SP45,FLAPS 20 LAUNCH,ALPHA1= 6 DEG

ORB

CA5 ORB TC5 AT38.2 (PRES. K1 F20 H15.6 V9.1)(XGM079)

SYMBOL
○
□
◇

MACH:
.499
.600
.700

ALPHA1
RUD-U
ELV-1B
S1-2
S5-6

PARAMETRIC VALUES
6.000
.000
.000
45.000
45.000

STAB
RUD-L
ELV-0B
S3-4
ICRB

1.000
.000
3.000
45.000
7.850

REFERENCE INFORMATION

SREF 2690.0000 SQ.FT.
LREF 474.8100 IN.
BREF 936.6800 IN..
XMRP 1109.0000 IN. X0
YMRP .0000 IN. Y0
ZMRP 375.0000 IN. Z0
SCALE .0300

ROLLING MOMENT COEFFICIENT, CSL, (STABILITY AXIS)

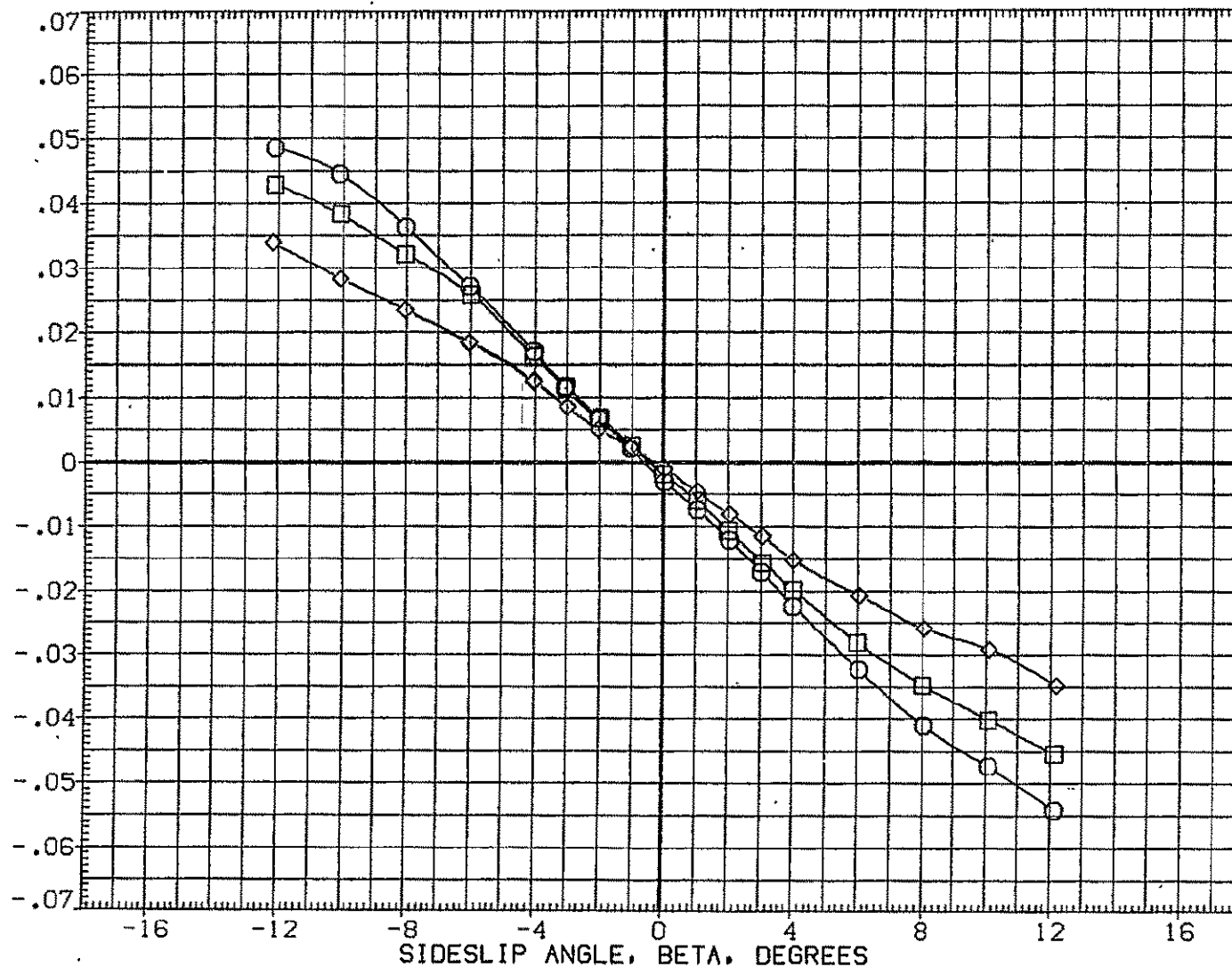


FIG.128 747+ORB(8 DEG)+TIP FINS+SP45,FLAPS 20 LAUNCH,ALPHA1= 6 DEG

ORB

SYMBOL	MACH	PARAMETRIC VALUES				REFERENCE INFORMATION		
○	.300	ALPHA I	2.000	STAB	1.000	SREF	5500.0000	SQ.FT.
□	.500	RUD-U	.000	RUD-L	.000	LREF	327.8000	IN.
◇	.600	ELV-18	.000	ELV-08	3.000	BREF	2348.0000	IN.
△	.700	S1-2	.000	S3-4	45.000	XMRP	1339.9100	IN. XC
		S5-6	20.000	10RB	7.850	YMRP	.0000	IN. YC
						ZMRP	190.7500	IN. ZC
						SCALE	.0300	

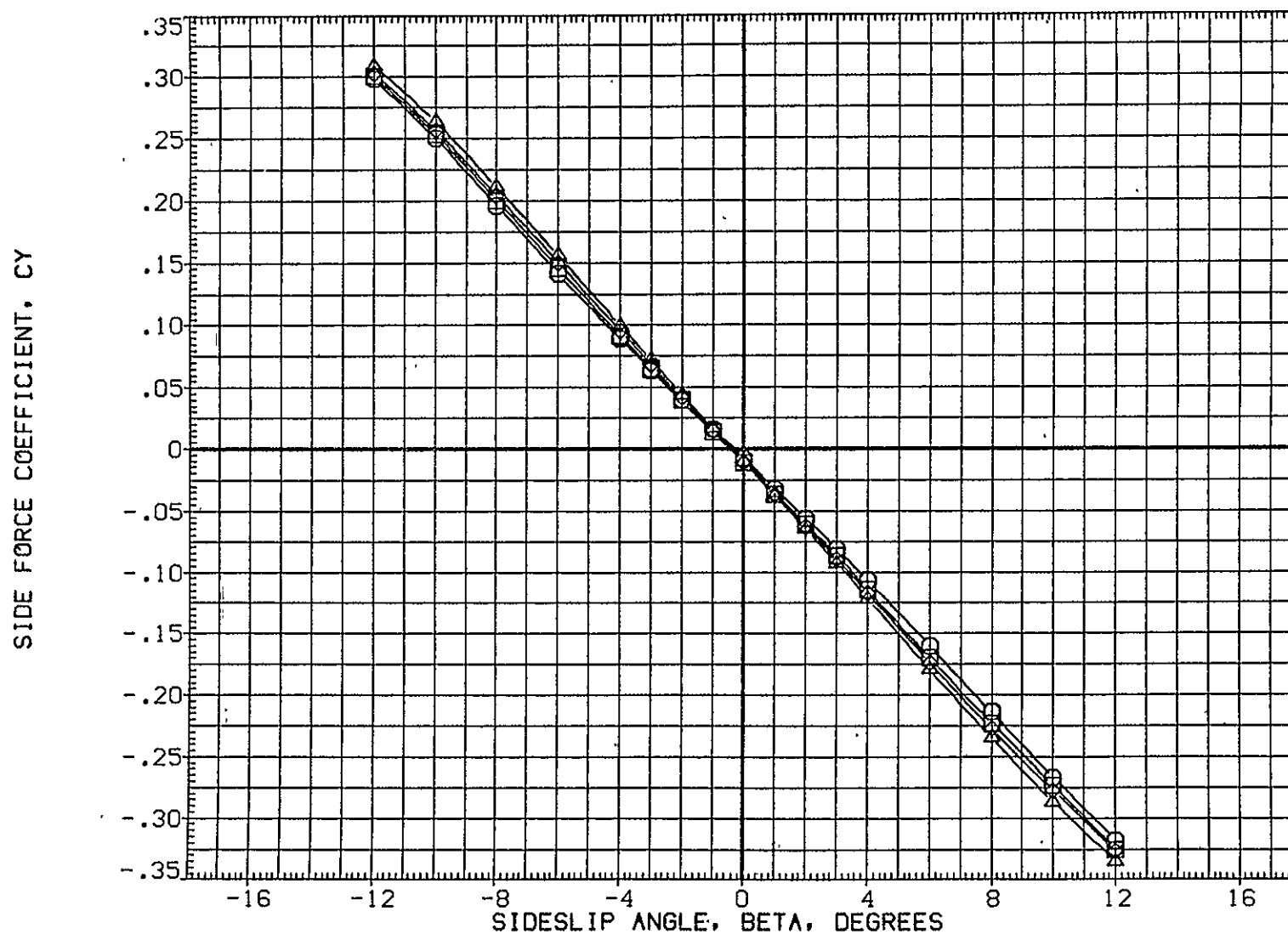


FIG.129 747+ORB(8 DEG)+TIP FINS+STD SPD BRK,FLAPS UP LAUNCH,ALPHA I= 2 DEG TOTAL

CA5 K1 F0 H15.6 V9.1 (PLUS. 0RB TC5 AT38.2)(RGM082)

SYMBOL	MACH	ALPHA I	PARAMETRIC VALUES				REFERENCE INFORMATION		
○	.300	ALPHA I	2.000	STAB	1.000		SREF	5500.0000	SQ.FT.
□	.500	RUD-U	.000	RUD-L	.000		LREF	327.8000	IN.
◇	.600	ELV-1B	.000	ELV-0B	3.000		BREF	2348.0000	IN.
△	.700	S1-2	.000	S3-4	45.000		XMRP	1339.9100	IN. XC.
		S5-6	20.000	10RB	7.850		YMRP	.0000	IN. YC
							ZMRP	190.7500	IN. ZC
							SCALE	.0300	

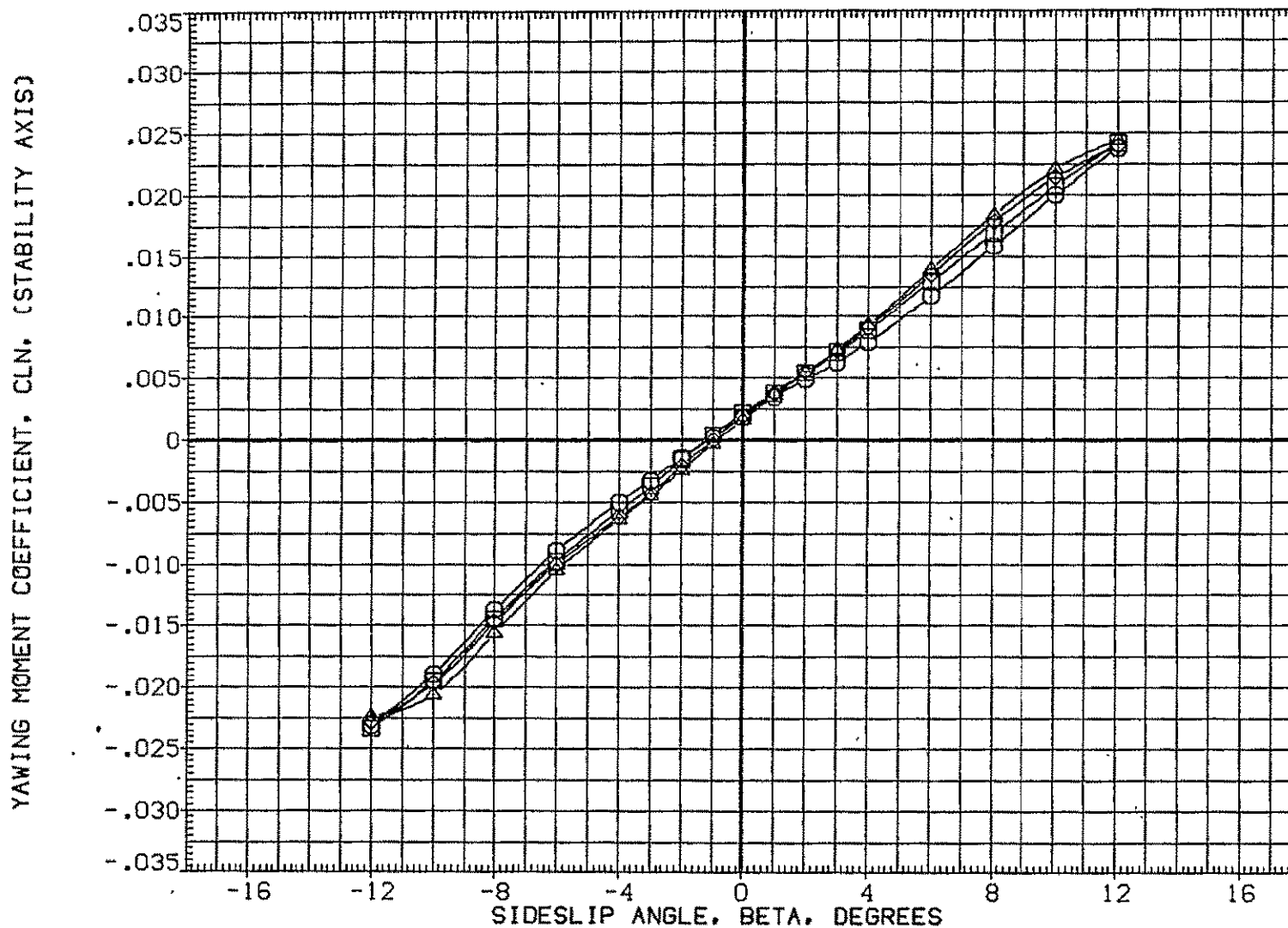


FIG.129 747+0RB(8 DEG)+TIP FINS+STD SPD BRK,FLAPS UP LAUNCH,ALPHA I= 2 DEG TOTAL

SYMBOL	MACH	PARAMETRIC VALUES
○	.300	ALPHA1 2.000 STAB 1.000
□	.500	RUD-U .000 RUD-L .000
◇	.600	ELV-1B .000 ELV-OB 3.000
△	.700	S1-2 .000 S3-4 45.000
		S5-6 20.000 TORB 7.850

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

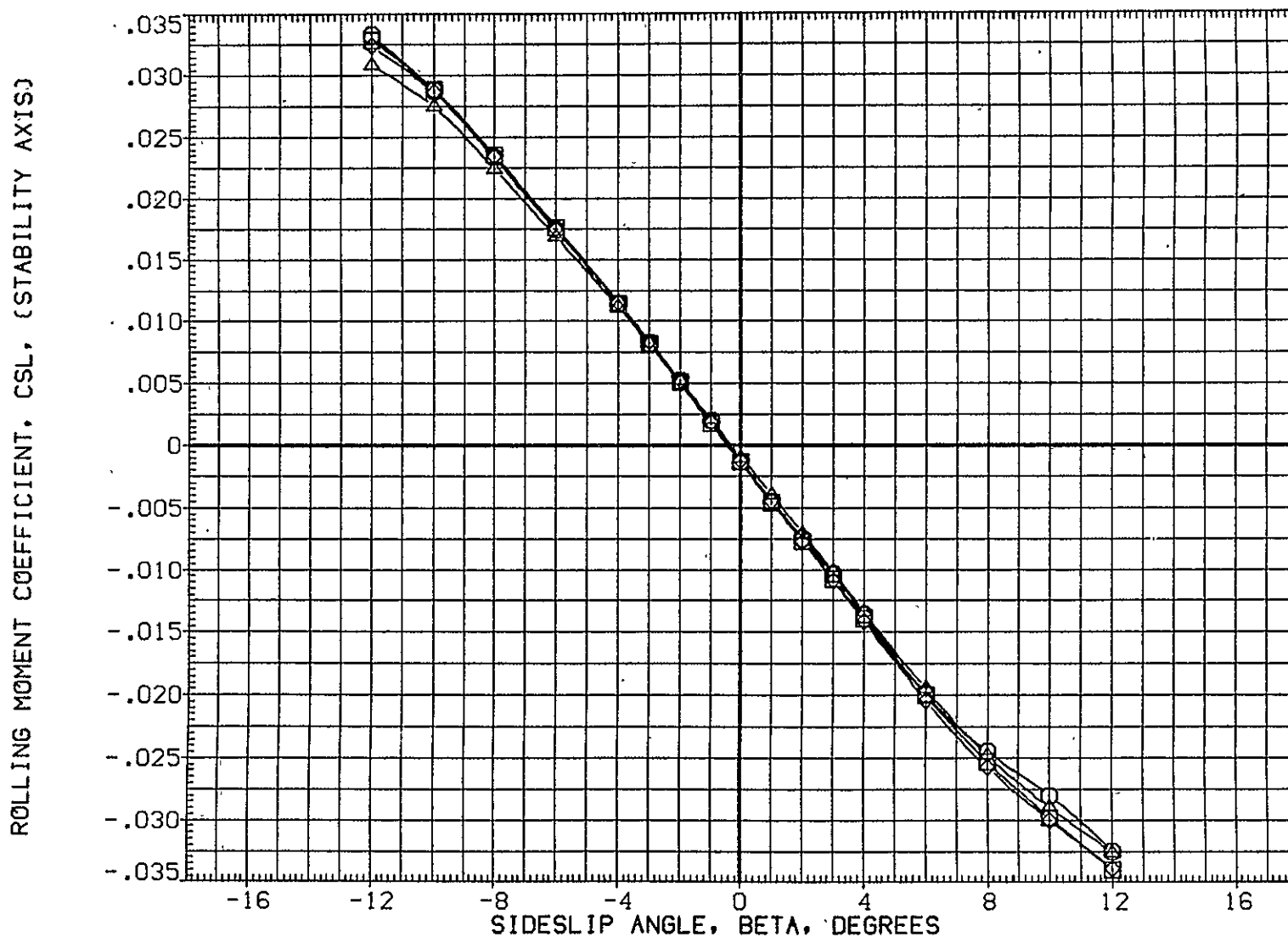


FIG.129 747+ORB(8 DEG)+TIP FINS+STD SPD BRK,FLAPS UP LAUNCH,ALPHA1= 2 DEG TOTAL

CA5 K1 F0 H15.6 V9.1 MINUS ORB TC5 AT38.2 (BGM082)

SYMBOL	MACH	PARAMETRIC VALUES			
		ALPHA I	2.000	STAB	1.000
△	.300	RUD-U	.000	RUD-L	.000
◇	.500	ELV-IB	.000	ELV-OB	3.000
□	.600	SI-2	.000	S3-4	45.000
○	.700	S5-6	20.000	IORB	7.850

REFERENCE INFORMATION		
SREF	5500.0000	SG.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

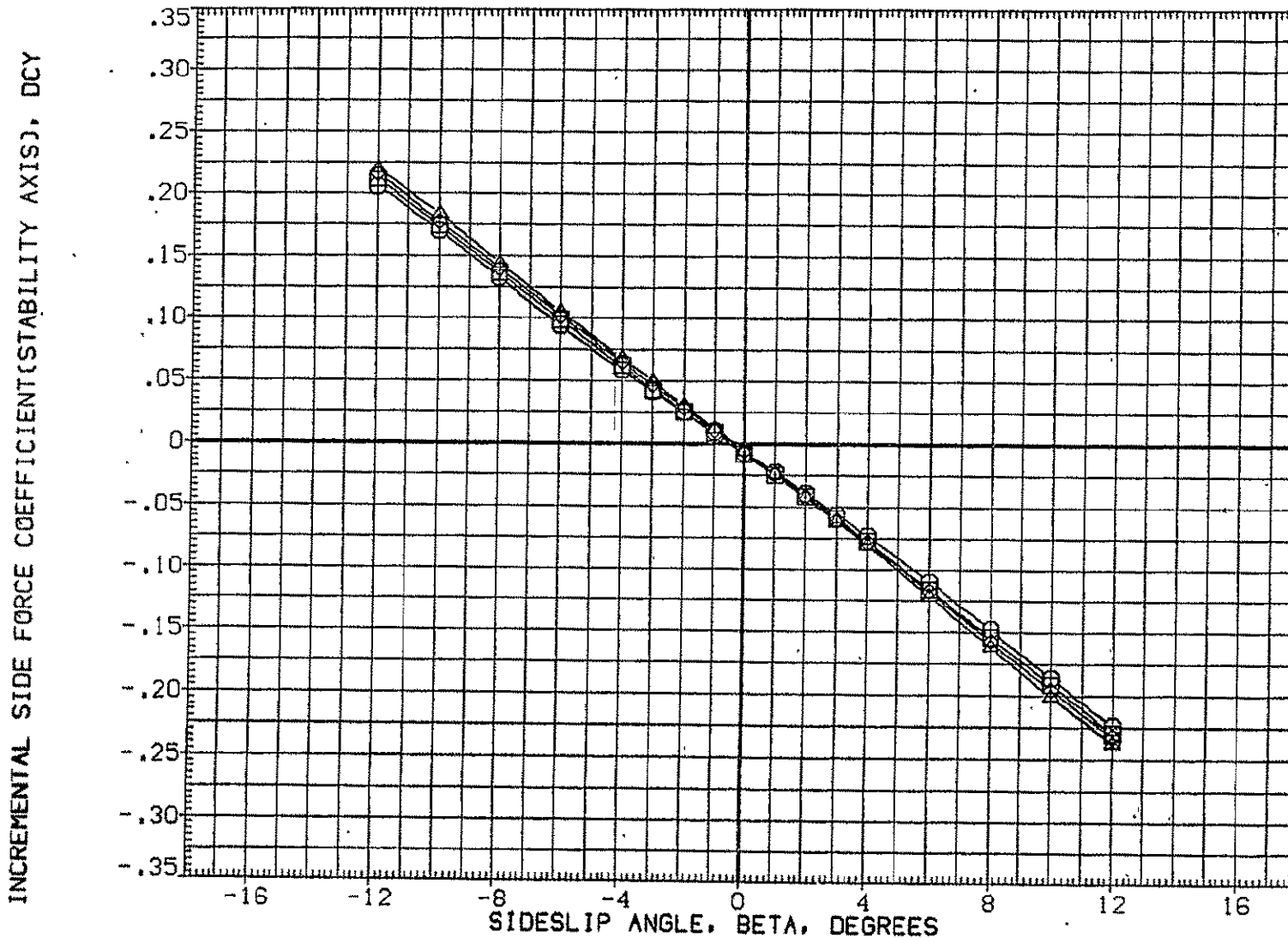


FIG.130 747+ORB(8 DEG)+TIP FINS+STD SPD BRK, FLAPS UP LAUNCH, ALPHA I= 2 DEG 747

SYMBOL	MACH	PARAMETRIC VALUES
○	.300	ALPHA1 2.000 STAB 1.000
□	.500	RUD-U .000 RUD-L .000
◇	.600	ELV-1B .000 ELV-OB 3.000
△	.700	S1-2 .000 S3-4 45.000
		S5-6 20.000 10RB 7.850

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

INCREMENTAL YAWING MOMENT COEFFICIENT (STABILITY AXIS), DCLN

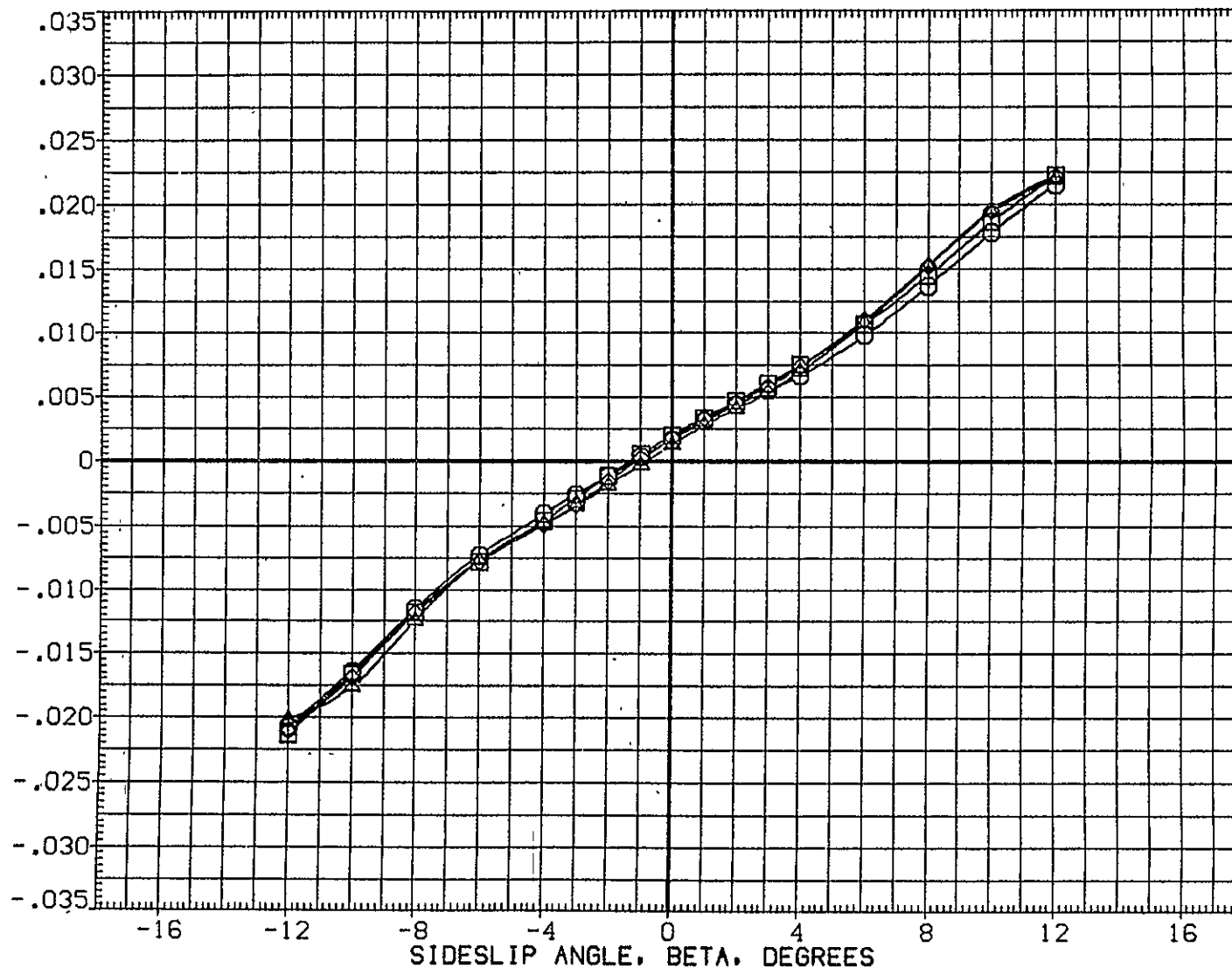


FIG.130 747+ORB(8 DEG)+TIP FINS+STD SPD BRK,FLAPS UP LAUNCH,ALPHA1= 2 DEG 747

CA5 K1 F0 H15.6 V9.1 MINUS ORB TC5 AT38.2 (BGM082)

SYMBOL	MACH	PARAMETRIC VALUES	REFERENCE INFORMATION
○	.300	ALPHA1 2.000 STAB 1.000	SREF 5500.0000 SQ.FT.
□	.500	RUD-U .000 RUD-L .000	LREF 327.8000 IN.
◇	.600	ELV-IB .000 ELV-OB 3.000	BREF 2348.0000 IN.
△	.700	S1-2 .000 S3-4 45.000	XMRP 1339.9100 IN. XC
		S5-6 20.000 TORB 7.850	YMRP .0000 IN. YC
			ZMRP 190.7500 IN. ZC
			SCALE .0300

INCREMENTAL ROLLING MOMENT COEFFICIENT(STABILITY AXIS), DCSL

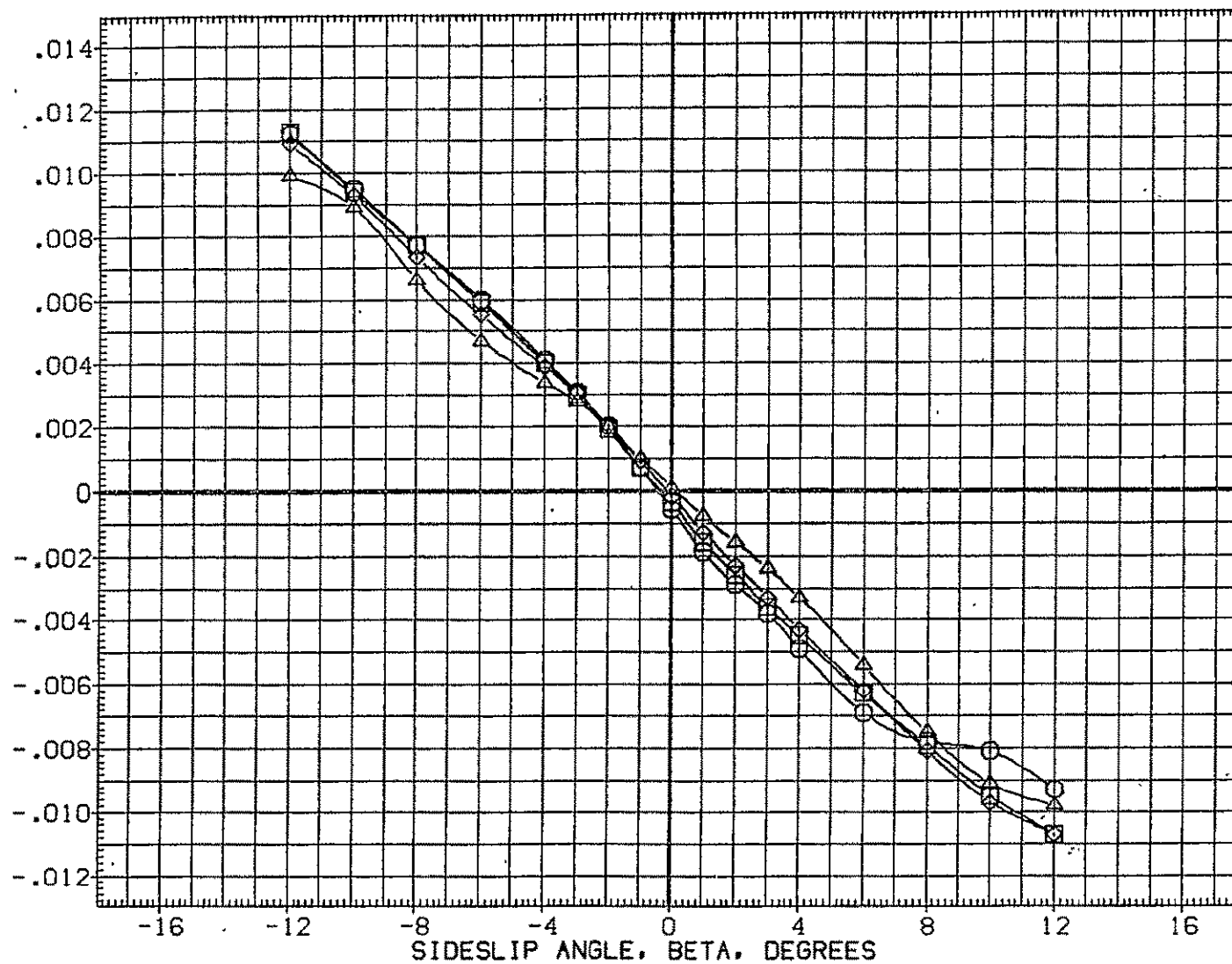


FIG.130 747+ORB(8 DEG)+TIP FINS+STD SPD BRK,FLAPS UP LAUNCH,ALPHA1= 2 DEG 747

SYMBOL	MACH	PARAMETRIC VALUES				REFERENCE INFORMATION	
○	.150	ALPHA I	2.000	STAB	1.000	SREF	2690.0000 SQ.FT.
□	.299	RUD-U	.000	RUD-L	.000	LREF	474.8100 IN.
◇	.500	ELV-IB	.000	ELV-OB	3.000	BREF	936.6800 IN.
△	.600	S1-2	.000	S3-4	45.000	XMRP	1109.0000 IN. X0
▽	.700	S5-6	20.000	10RB	7.850	YMRP	.0000 IN. Y0
						ZMRP	375.0000 IN. Z0
						SCALE	.0300

SIDE FORCE COEFFICIENT, CY

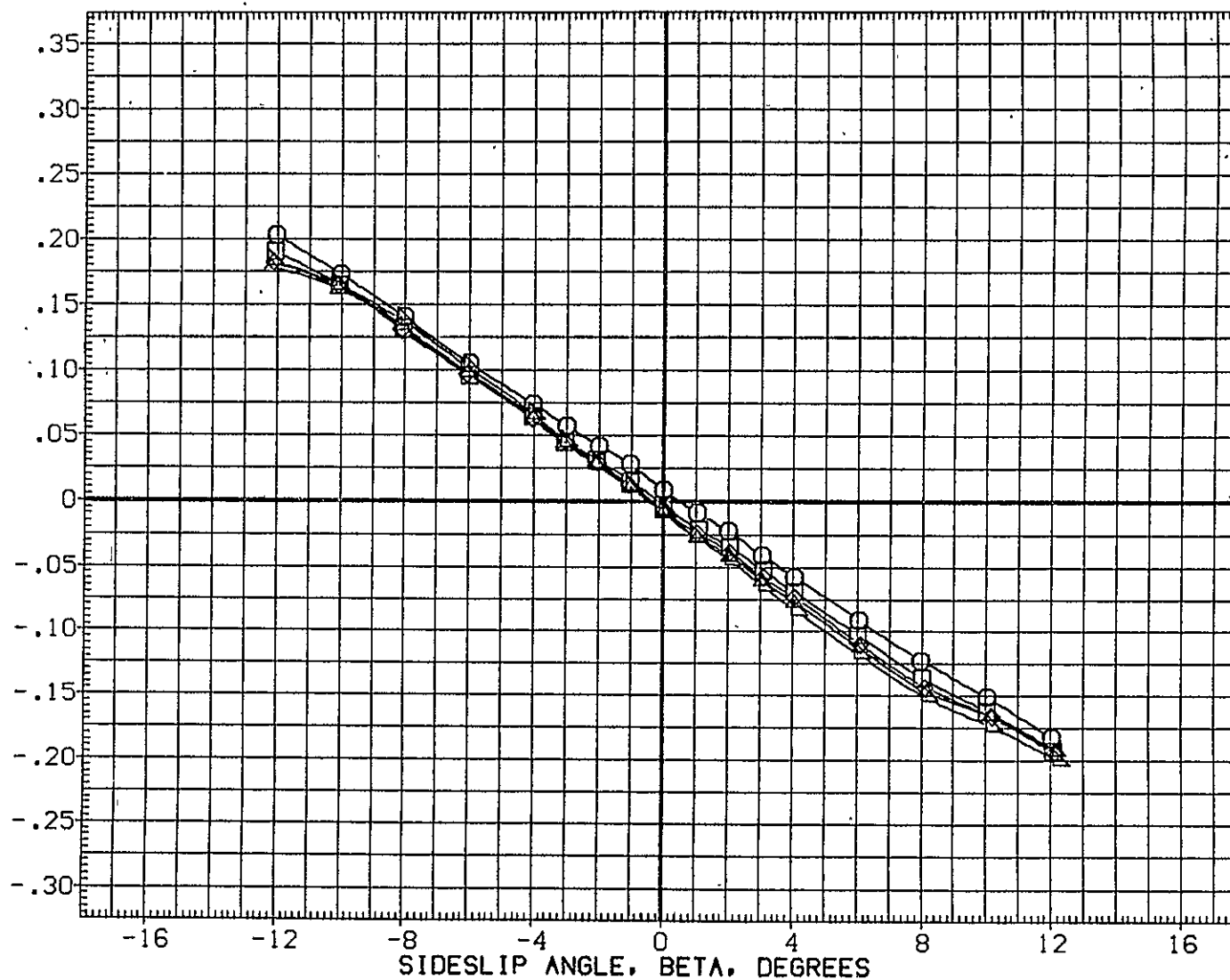


FIG.131 747+0RB(8 DEG)+TIP FINS+STD SPD BRK, FLAPS UP LAUNCH, ALPHA I= 2 DEG 0RB

CA5 0RB TC5 AT38.2 (PRES. K1 FO H15.6 V9.1)(XGM082)

SYMBOL	MACH	PARAMETRIC VALUES			
○	.150	ALPHA1	2.000	STAB	1.000
□	.299	RUD-U	.000	RUD-L	.000
◇	.500	ELV-1B	.000	ELV-0B	3.000
△	.600	SI-2	.000	S3-4	45.000
▽	.700	SS-6	20.000	I0RB	7.850

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN. X0
YMRP	.0000	IN. Y0
ZMRP	375.0000	IN. Z0
SCALE	.0300	

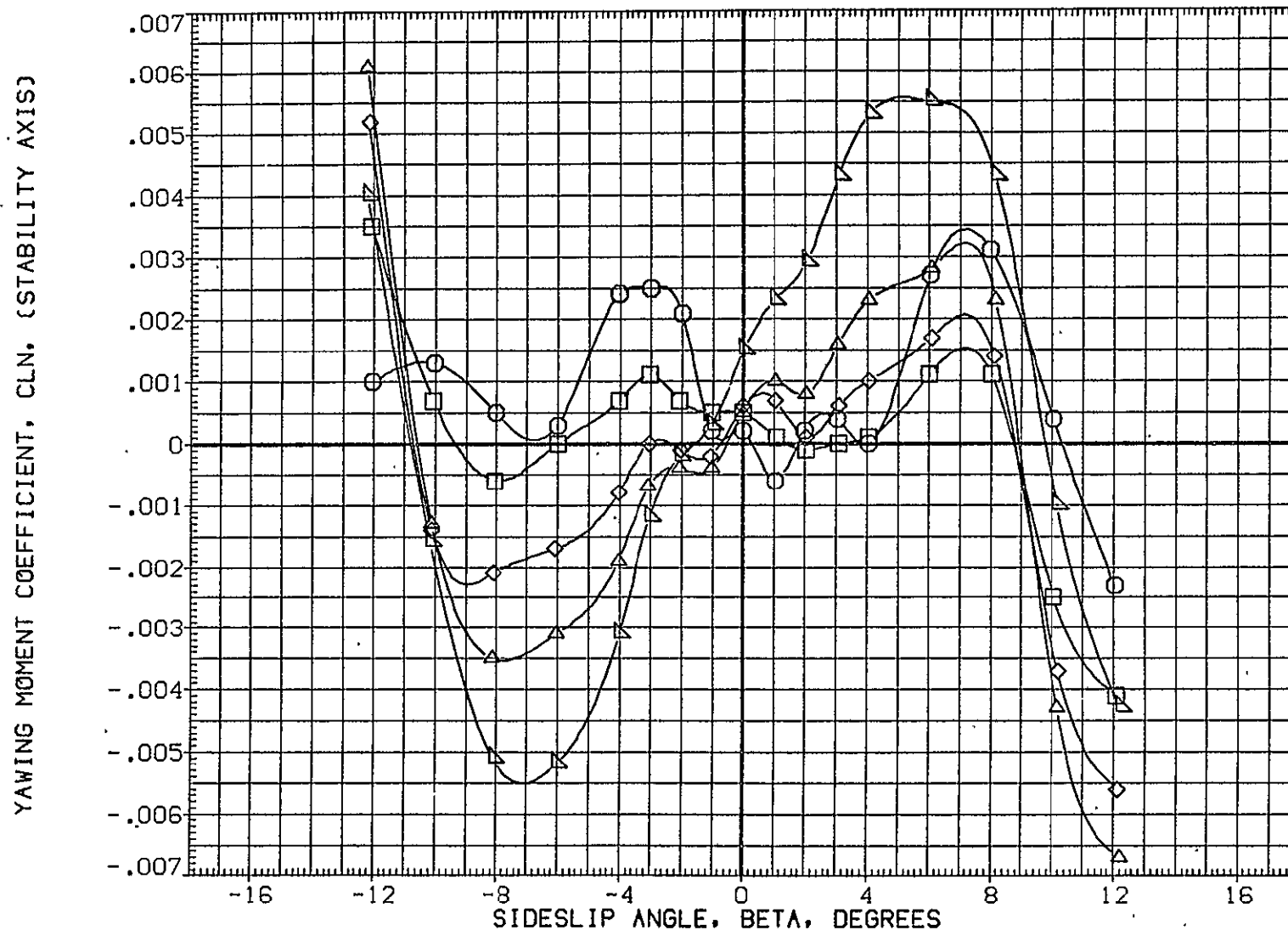


FIG.131 747+0RB(8 DEG)+TIP FINS+STD SPD BRK,FLAPS UP LAUNCH,ALPHA1= 2 DEG 0RB

SYMBOL	MACH	PARAMETRIC VALUES				REFERENCE INFORMATION		
○	.150	ALPHA I	2.000	STAB	1.000	SREF	2690.0000	SQ.FT.
□	.299	RUD-U	.000	RUD-L	.000	LREF	474.8100	IN.
◇	.500	ELV-1B	.000	ELV-0B	3.000	BREF	936.6800	IN.
△	.600	S1-2	.000	S3-4	45.000	XM RP	1109.0000	IN. X0
▽	.700	S5-6	20.000	10RB	7.850	YM RP	.0000	IN. Y0
						ZM RP	375.0000	IN. Z0
						SCALE	.0300	

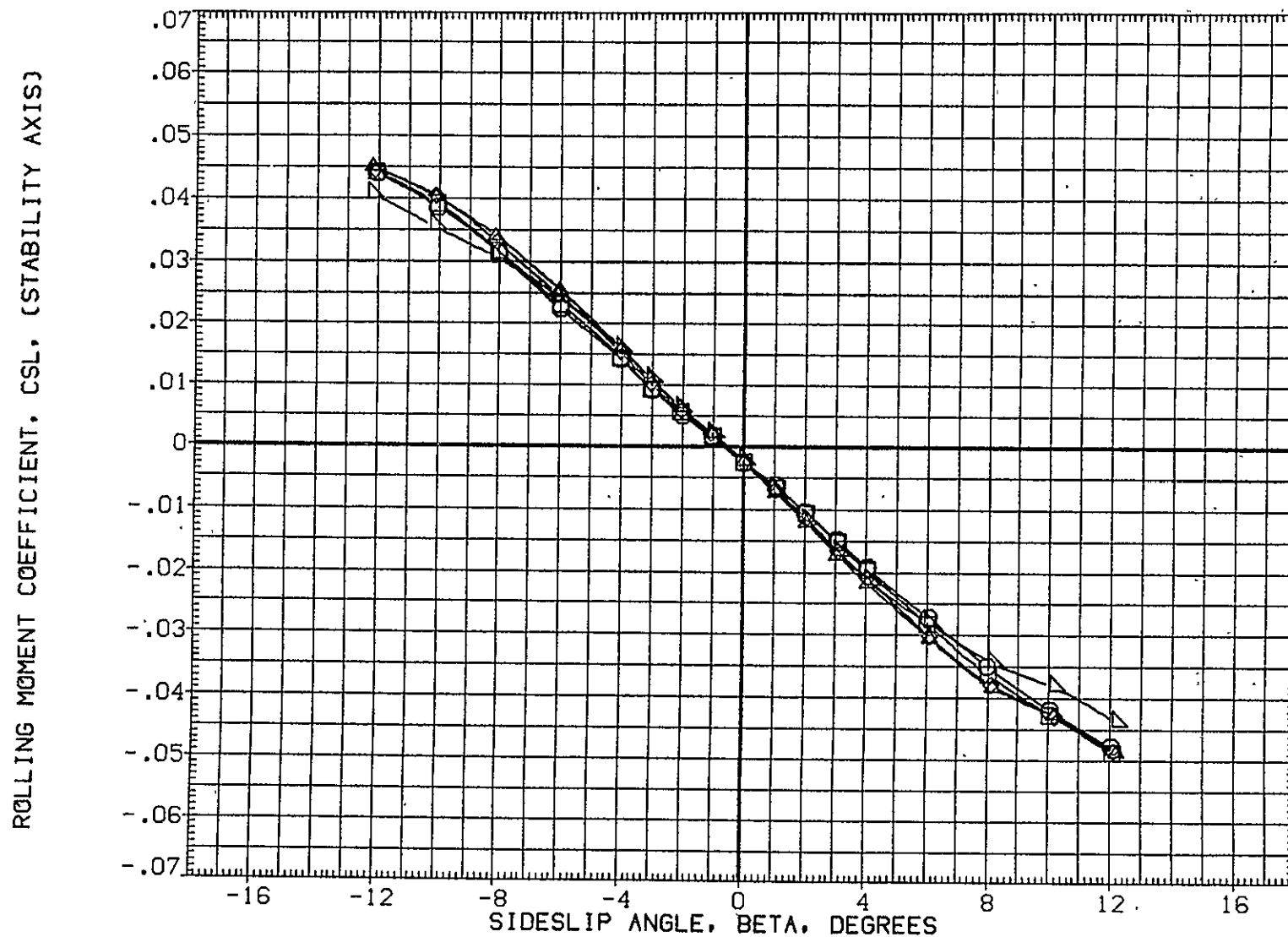


FIG.131 747+0RB(8 DEG)+TIP FINS+STD SPD BRK,FLAPS UP LAUNCH,ALPHA I= 2 DEG 0RB

CA5 K1 FO H15.6 V9.1 (PLUS. ORB TC5 AT38.2)(RGM083)

SYMBOL
○
□
◇
△
▽

MACH	ALPHA1	PARAMETRIC VALUES			
.150		6.000	STAB	1.000	
.300		.000	RUD-L	.000	
.500	ELV-1B	.000	ELV-OB.	3.000	
.600	S1-2	.000	S3-4	45.000	
.700	S5-6	20.000	IORB	7.850	

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

SIDE FORCE COEFFICIENT, CY

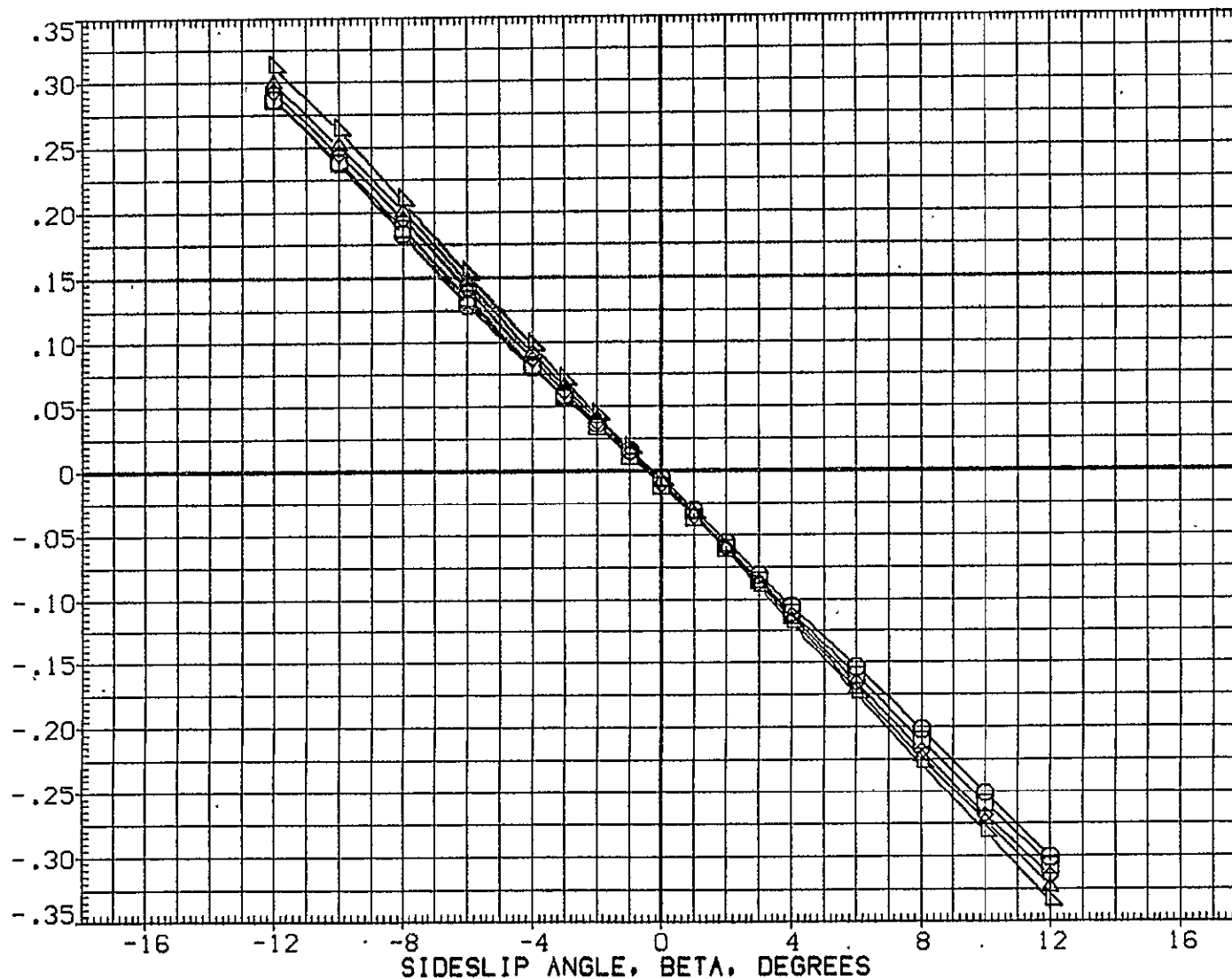


FIG.132 747+ORB(8 DEG)+TIP FINS+STD SPD BRK,FLAPS UP LAUNCH,ALPHA1= 6 DEG TOTAL

SYMBOL
 ○
 □
 ◇
 △
 ▽

MACH	ALPHA	PARAMETRIC VALUES
.150	ALPHA	6.000 STAB 1.000
.300	RUD-U	.000 RUD-L .000
.500	ELV-1B	.000 ELV-OB 3.000
.600	S1-2	.000 S3-4 45.000
.700	S5-6	20.000 10RB 7.850

REFERENCE INFORMATION		
SREF	5500.0000	50.F1
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

YAWING MOMENT COEFFICIENT, CLN, (STABILITY AXIS)

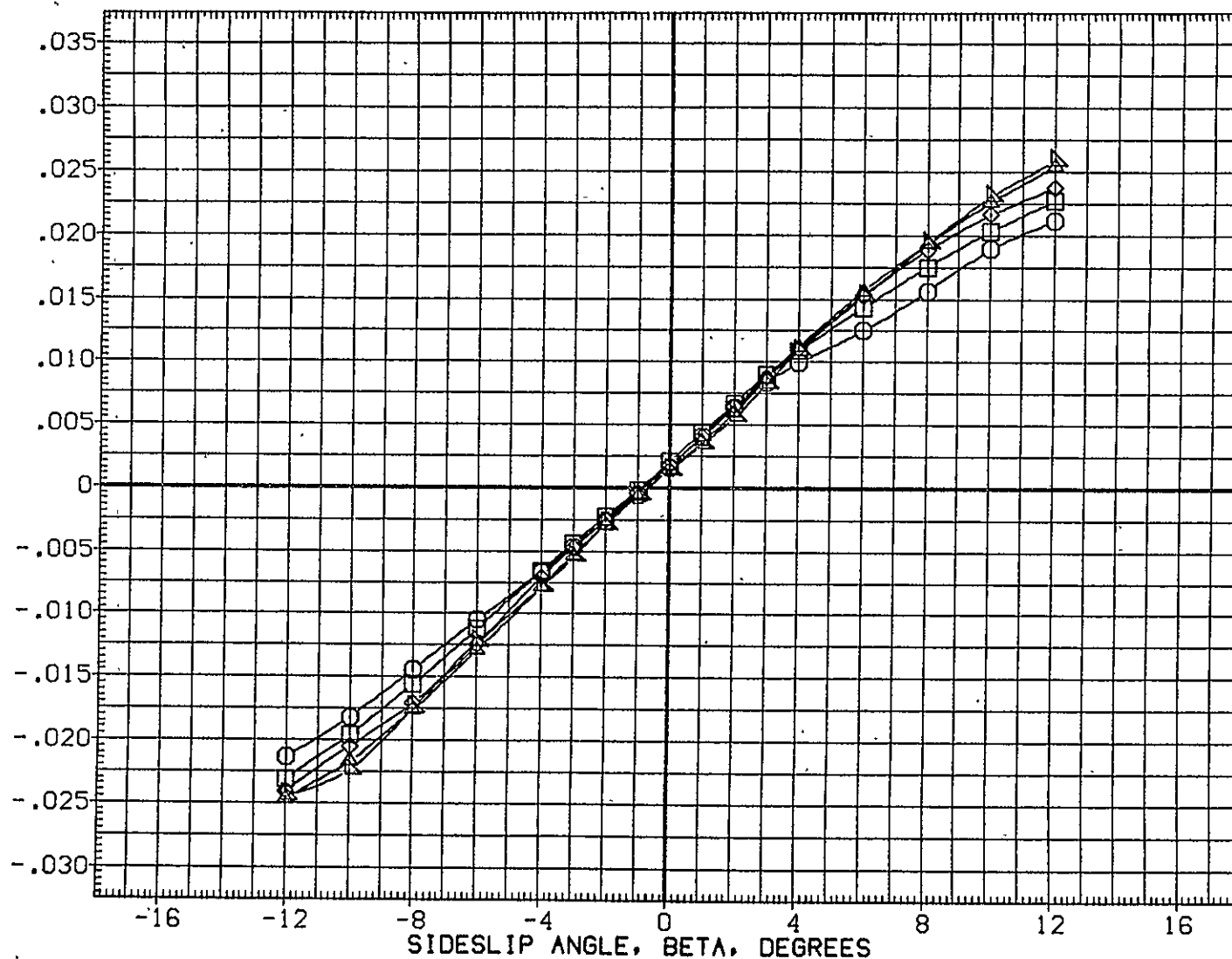


FIG.132 747+ORB(8 DEG)+TIP FINS+STD SPD BRK,FLAPS UP LAUNCH,ALPHA= 6 DEG TOTAL

CA5 K1 FO H15.6 V9.1 (PLUS. ORB TC5 AT38.2)(RGM083)

SYMBOL	MACH	PARAMETRIC VALUES
□	.150	ALPHA1 6.000 STAB 1.000
◇	.300	RUD-U .000 RUD-L .000
△	.500	ELV-1B .000 ELV-OB 3.000
▽	.600	S1-2 .000 S3-4 45.000
◻	.700	S5-6 20.000 ICRB 7.850

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

ROLLING MOMENT COEFFICIENT, CSL, (STABILITY AXIS)

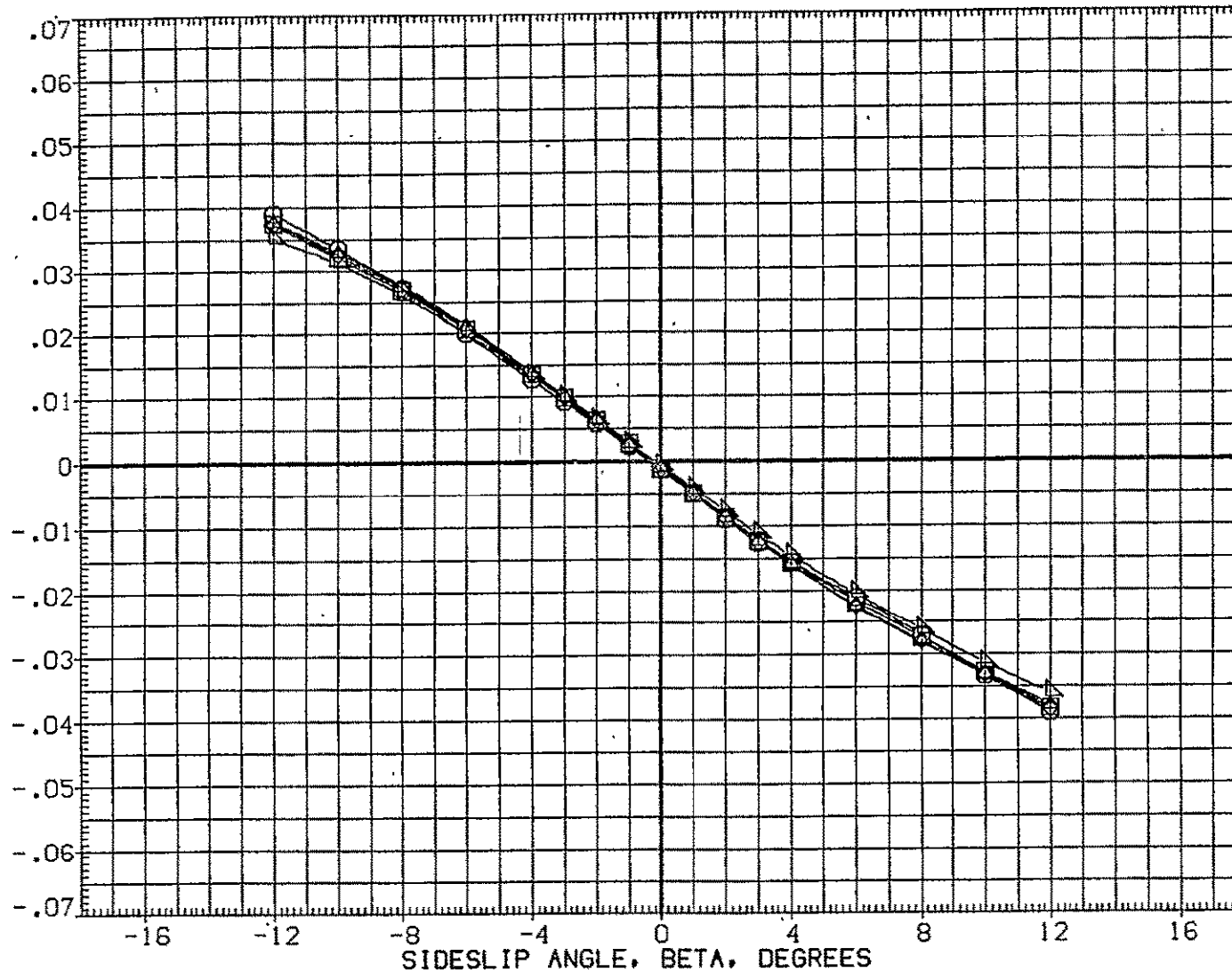


FIG.132 747+ORB(8 DEG)+TIP FINS+STD SPD BRK,FLAPS UP LAUNCH,ALPHA1= 6 DEG TOTAL

SYMBOL	MACH	ALPHA I	PARAMETRIC VALUES				REFERENCE INFORMATION		
○	.150	ALPHA I	6.000	STAB	1.000		SREF	5500.0000	50.FT.
□	.300	RUD-U	.000	RUD-L	.000		LREF	327.8000	IN.
◇	.500	ELV-1B	.000	ELV-OB	3.000		BREF	2348.0000	IN.
△	.600	SI-2	.000	S3-4	45.000		XMRP	1339.9100	IN. XC
▽	.700	S5-6	20.000	IORB	7.850		YMRP	.0000	IN. YC
							ZMRP	190.7500	IN. ZC
							SCALE	.0300	

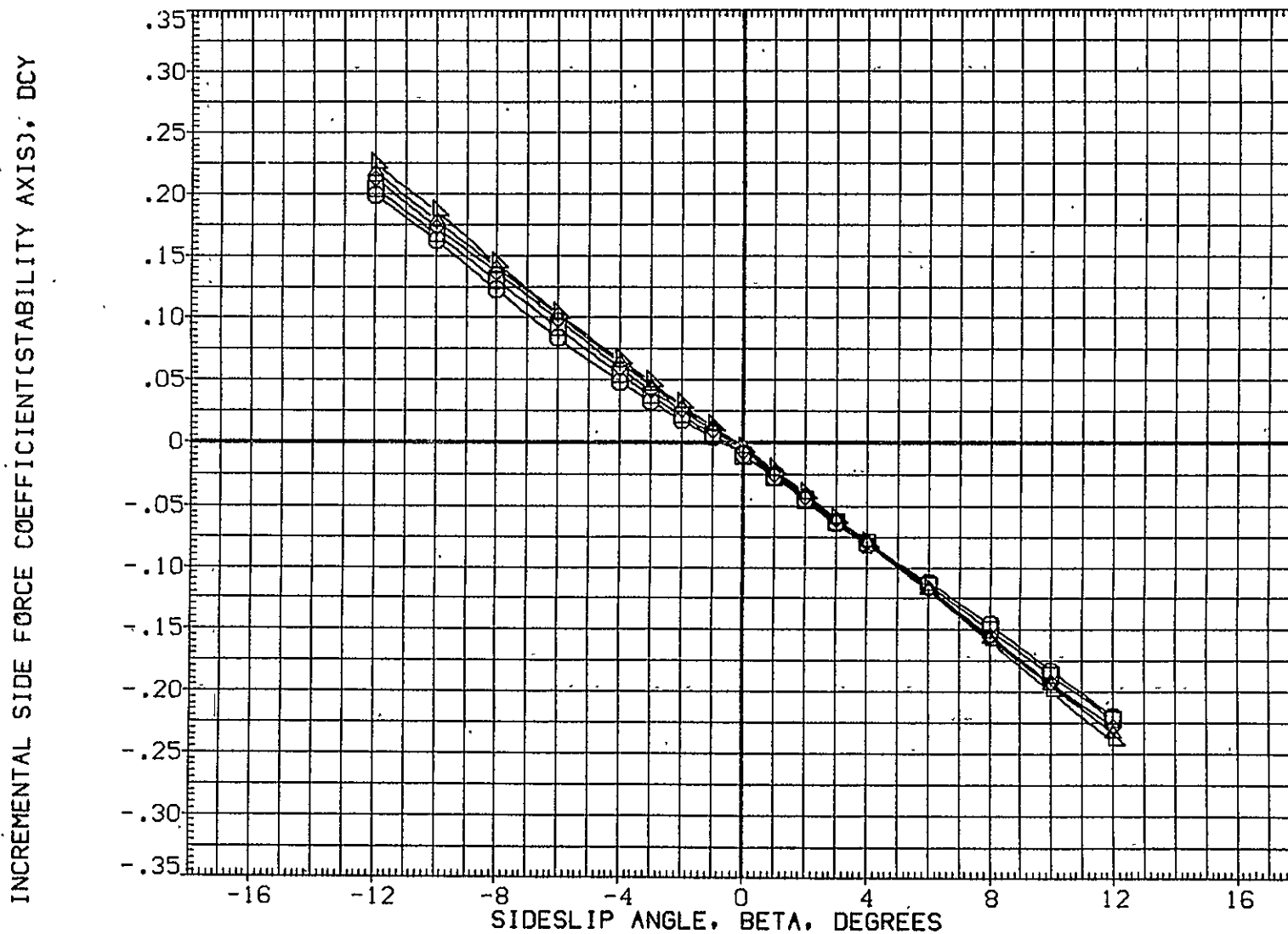


FIG.133 747+ORB(8 DEG)+TIP FINS+STD SPD BRK, FLAPS UP LAUNCH, ALPHA I= 6 DEG 747

CA5 K1 F0 H15.6 V9.1 MINUS ORB TC5 AT38.2 (BGM083)

SYMBOL	MACH	PARAMETRIC VALUES	REFERENCE INFORMATION
○	.150	ALPHA I 6.000 STAB 1.000	SREF 5500.0000 SQ.FT.
□	.300	RUD-U .000 RUD-L .000	LREF 327.8000 IN.
◇	.500	ELV-IB .000 ELV-OB 3.000	BREF 2348.0000 IN.
△	.600	S1-2 .000 S3-4 45.000	XMRP 1339.9100 IN. XC
▽	.700	S5-6 20.000 IORB 7.850	YMRP .0000 IN. YC
			ZMRP 190.7500 IN. ZC
			SCALE .0300

INCREMENTAL YAWING MOMENT COEFFICIENT (STABILITY AXIS), DCLN

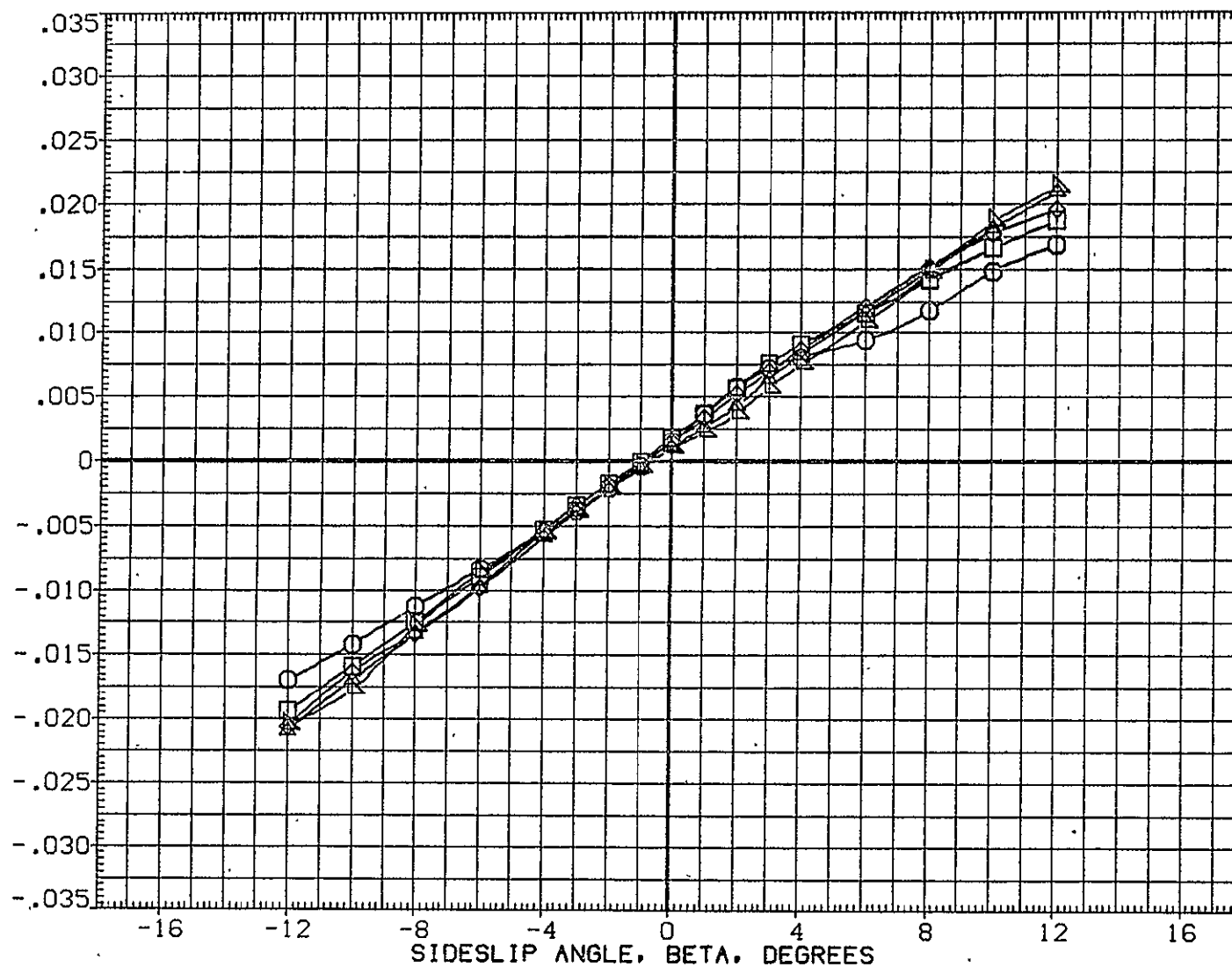


FIG.133 747+ORB(8 DEG)+TIP FINS+STD SPD BRK, FLAPS UP LAUNCH, ALPHA I= 6 DEG 747

SYMBOL	MACH	PARAMETRIC VALUES	REFERENCE INFORMATION
○	.150	ALPHA I 6.000 STAB 1.000	SREF 5500.0000 SQ.FT.
□	.300	RUD-U .000 RUD-L .000	LREF 327.8000 IN.
◇	.500	ELV-IB .000 ELV-OB 3.000	BREF 2348.0000 IN.
△	.600	S1-2 .000 S3-4 45.000	XMRP 1339.9100 IN. XC
▽	.700	S5-6 20.000 10RB 7.850	YMRP .0000 IN. YC
			ZMRP 190.7500 IN. ZC
			SCALE .0300

INCREMENTAL ROLLING MOMENT COEFFICIENT (STABILITY AXIS), DC SL

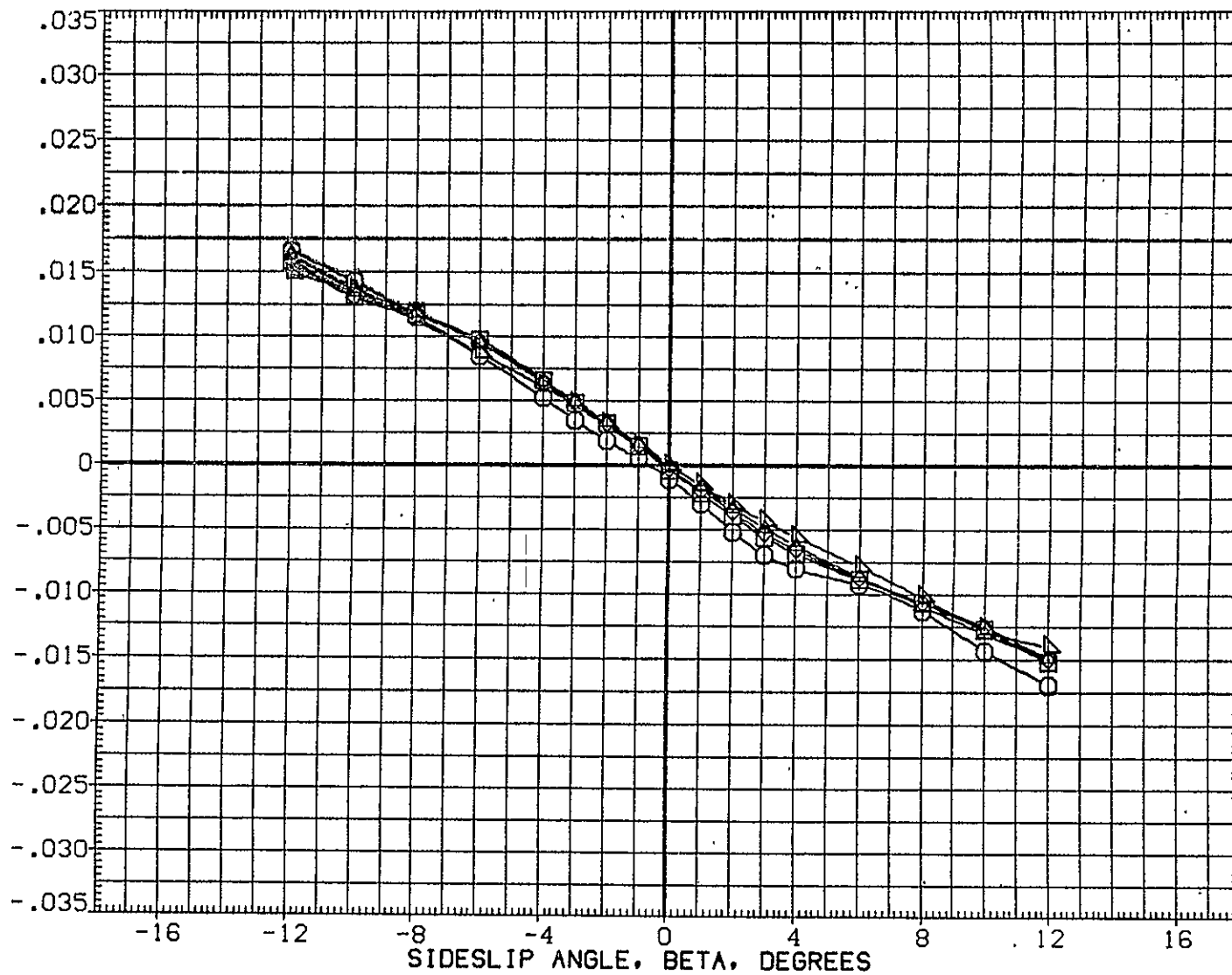


FIG.133 747+ORB(8 DEG)+TIP FINS+STD SPD BRK, FLAPS UP. LAUNCH, ALPHA I= 6 DEG 747

CA5 0RB TC5 AT38.2 (PRES. K1 FO H15.6 V9.1)(XGM083)

SYMBOL	MACH	PARAMETRIC VALUES	REFERENCE INFORMATION
○	.150	ALPHA I 6.000 STAB 1.000	SREF 2690.0000 SQ.FT.
□	.300	RUD-U .000 RUD-L .000	LREF 474.8100 IN.
◇	.499	ELV-IB .000 ELV-OB 3.000	BREF 936.6800 IN.
△	.601	S1-2 .000 S3-4 45.000	XMRP 1109.0000 IN. X0
▽	.700	S5-6 20.000 IORB 7.850	YMRP .0000 IN. Y0
			ZMRP 375.0000 IN. Z0
			SCALE .0300

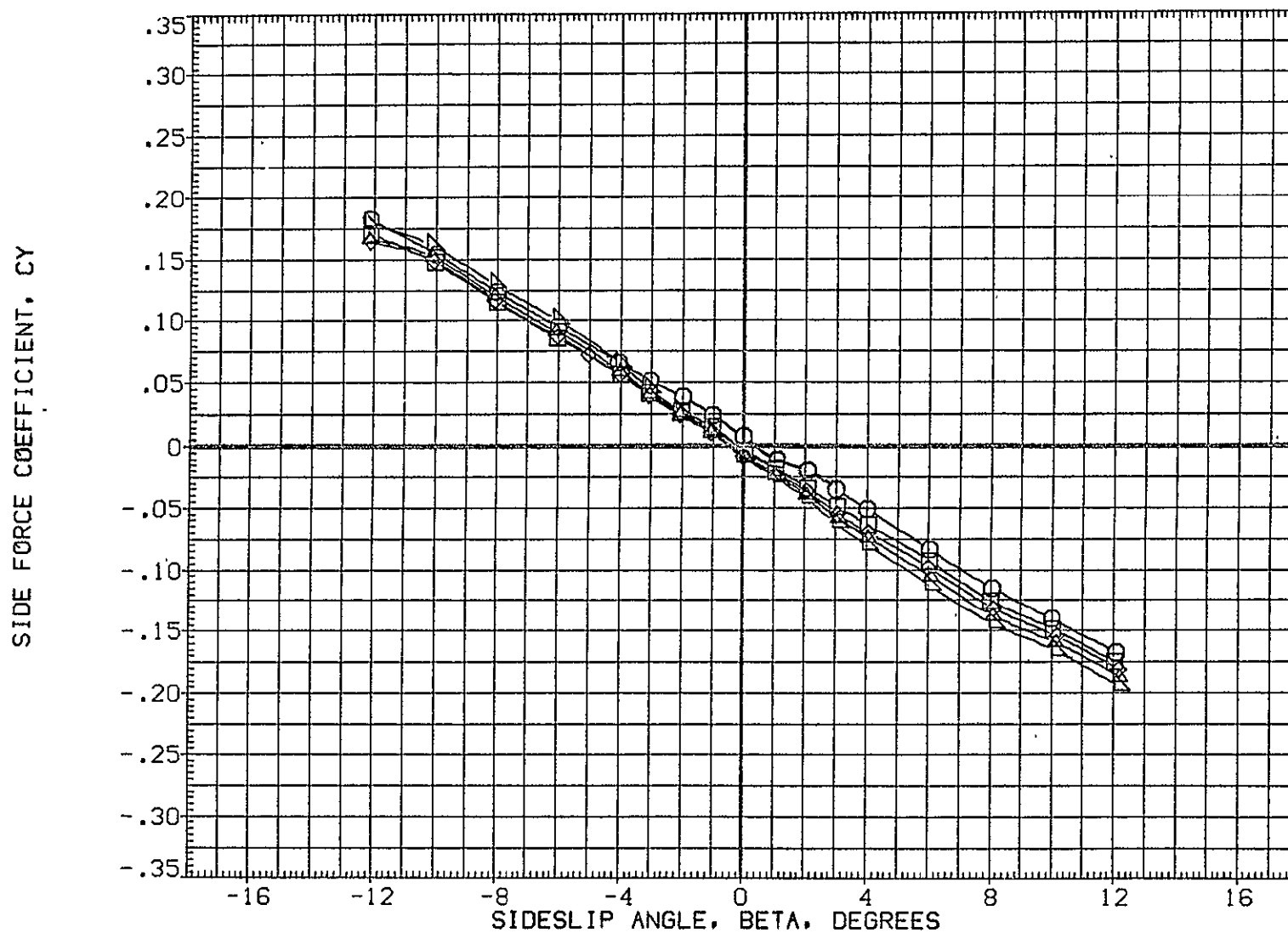


FIG.134 747+0RB(8 DEG)+TIP FINS+STD SPD BRK,FLAPS UP LAUNCH,ALPHA I= 6 DEG 0RB

SYMBOL	MACH	PARAMETRIC VALUES
○	.150	ALPHA1 6.000 STAB 1.000
□	.300	RUD-U .000 RUD-L .000
◇	.499	ELV-1B .000 ELV-OB 3.000
△	.601	S1-2 .000 S3-4 15.000
▽	.700	S5-6 20.000 10RB 7.850

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN. X0
YMRP	.0000	IN. Y0
ZMRP	375.0000	IN. Z0
SCALE	.0300	

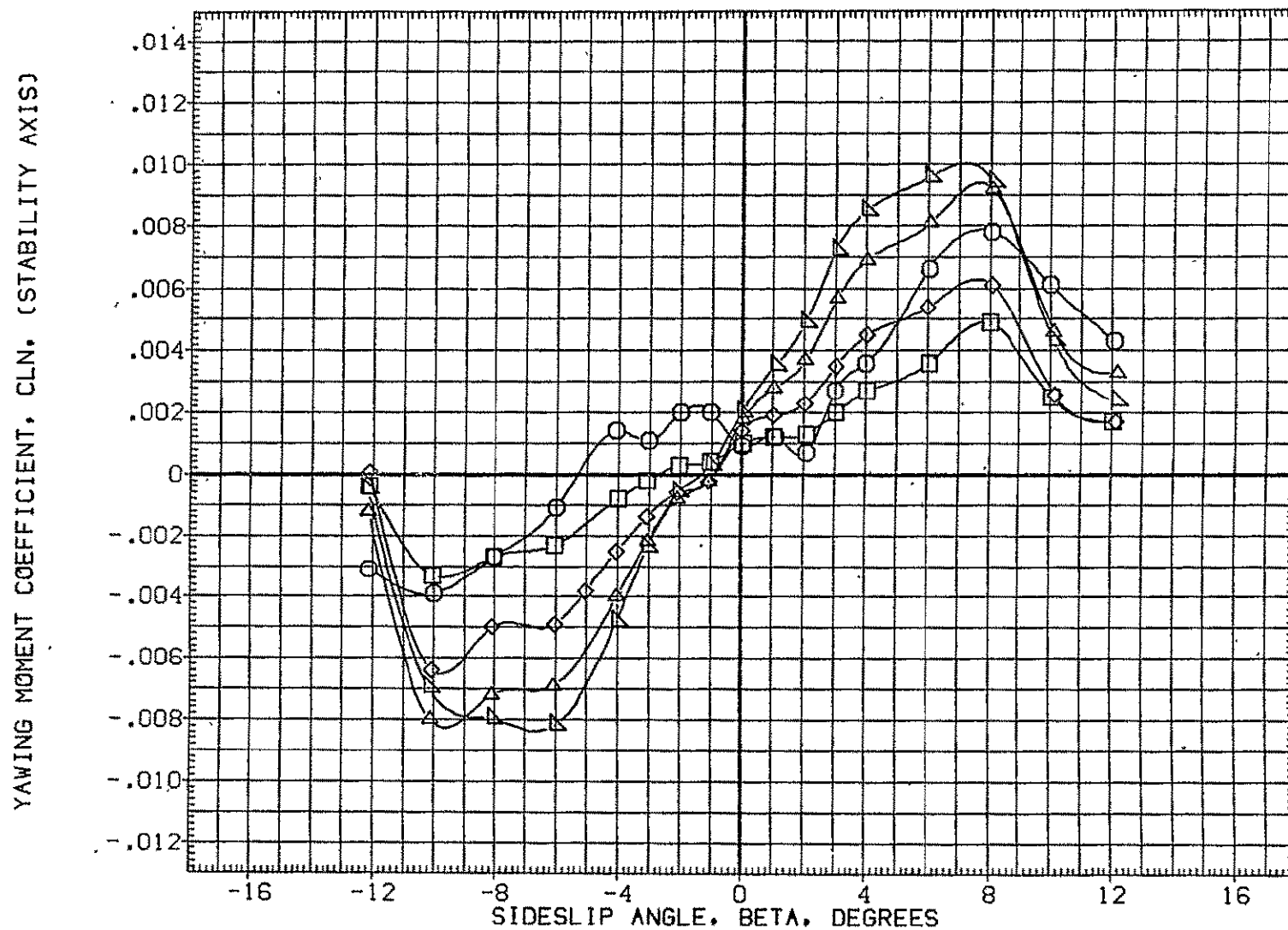


FIG.134 747+ORB(8 DEG)+TIP FINS+STD SPD BRK, FLAPS UP LAUNCH, ALPHA1= 6 DEG ORB

CA5 ORB TC5 AT38.2 (PRES. K1 F0 H15.6 V9.1)(XGM083)

SYMBOL
○
□
◇
△
▽

MACH
.150
.300
.499
.601
.700

ALPHA I
RUD-U
ELV-1B
SI-2
SS-6

PARAMETRIC VALUES

6.000 STAB 1.000
.000 RUD-L .000
.000 ELV-OB 3.000
.000 S3-4 45.000
20.000 10RB 7.850

REFERENCE INFORMATION

SREF 2690.0000 SQ.FT.
LREF 474.8100 IN.
BREF 936.6800 IN.
XMRP 1109.0000 IN. X0
YMRP .0000 IN. Y0
ZMRP 375.0000 IN. Z0
SCALE .0300

ROLLING MOMENT COEFFICIENT, CSL, (STABILITY AXIS)

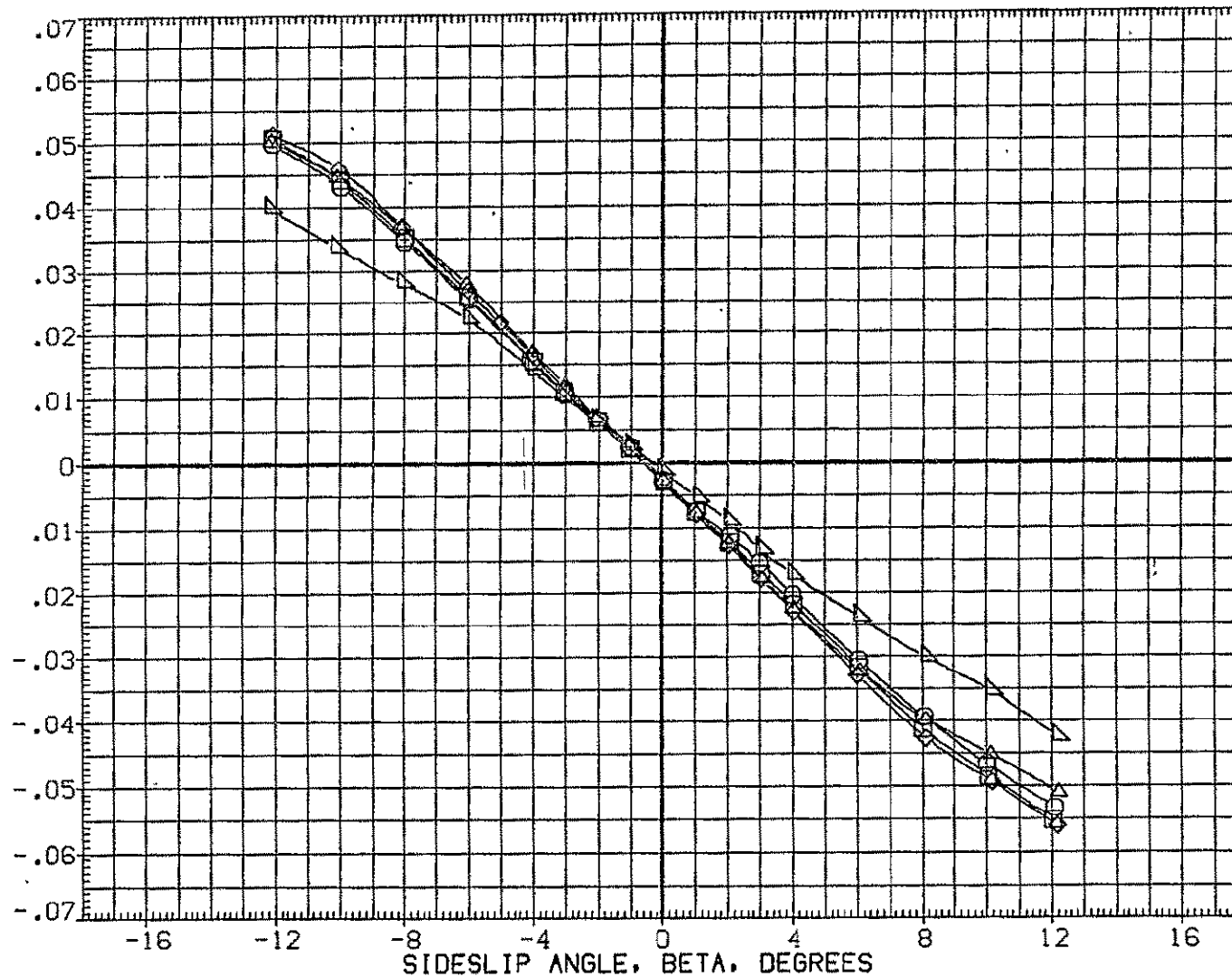


FIG.134 747+ORB(8 DEG)+TIP FINS+STD SPD BRK,FLAPS UP LAUNCH,ALPHA I= 6 DEG ORB

SYMBOL	MACH	PARAMETRIC VALUES				REFERENCE INFORMATION		
		ALPHA1	6.000	STAB	1.000	SREF	5500.0000	SQ.FT.
○	.300	RUD-U	10.000	RUD-L	10.000	LREF	327.8000	IN.
□	.500	ELV-1B	.000	ELV-OB	3.000	BREF	2348.0000	IN.
◇	.600	S1-2	.000	S3-4	45.000	XMRP	1339.9100	IN. XC
△	.700	S5-6	20.000	10RB	7.850	YMRP	.0000	IN. YC
						ZMRP	190.7500	IN. ZC
						SCALE	.0300	

SIDE FORCE COEFFICIENT, CY

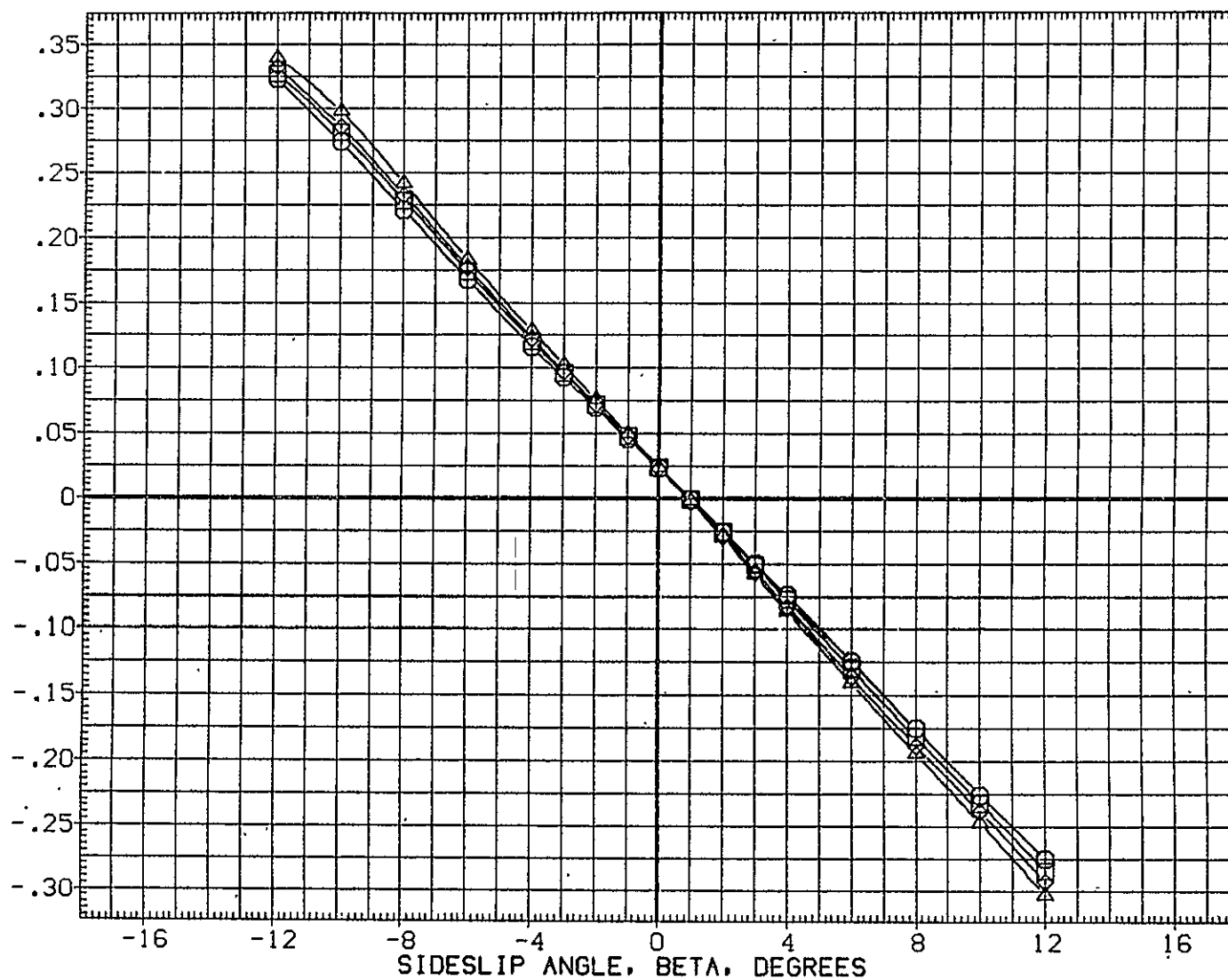


FIG.135 747+ORB(8 DEG)+TIP FINS+STD SPD BRK, FLAPS UP LAUNCH, ALPI=6, RUD=10/10 TOT

CA5 K1 F0 H15.6 V9.1 (PLUS. ORB TC5 AT38.2)(RGM086)

SYMBOL	MACH	PARAMETRIC VALUES	REFERENCE INFORMATION
○	.300	ALPHA1 6.000 STAB 1.000	SREF 5500.0000 SQ.FT.
□	.500	RUD-U 10.000 RUD-L 10.000	LREF 327.8000 IN.
◇	.600	ELV-1B .000 ELV-OB 3.000	BREF 2348.0000 IN.
△	.700	S1-2 .000 S3-4 45.000	XMRP 1339.9100 IN. XC
		S5-6 20.000 IORB 7.850	YMRP .0000 IN. YC
			ZMRP 190.7500 IN. ZC
			SCALE .0300

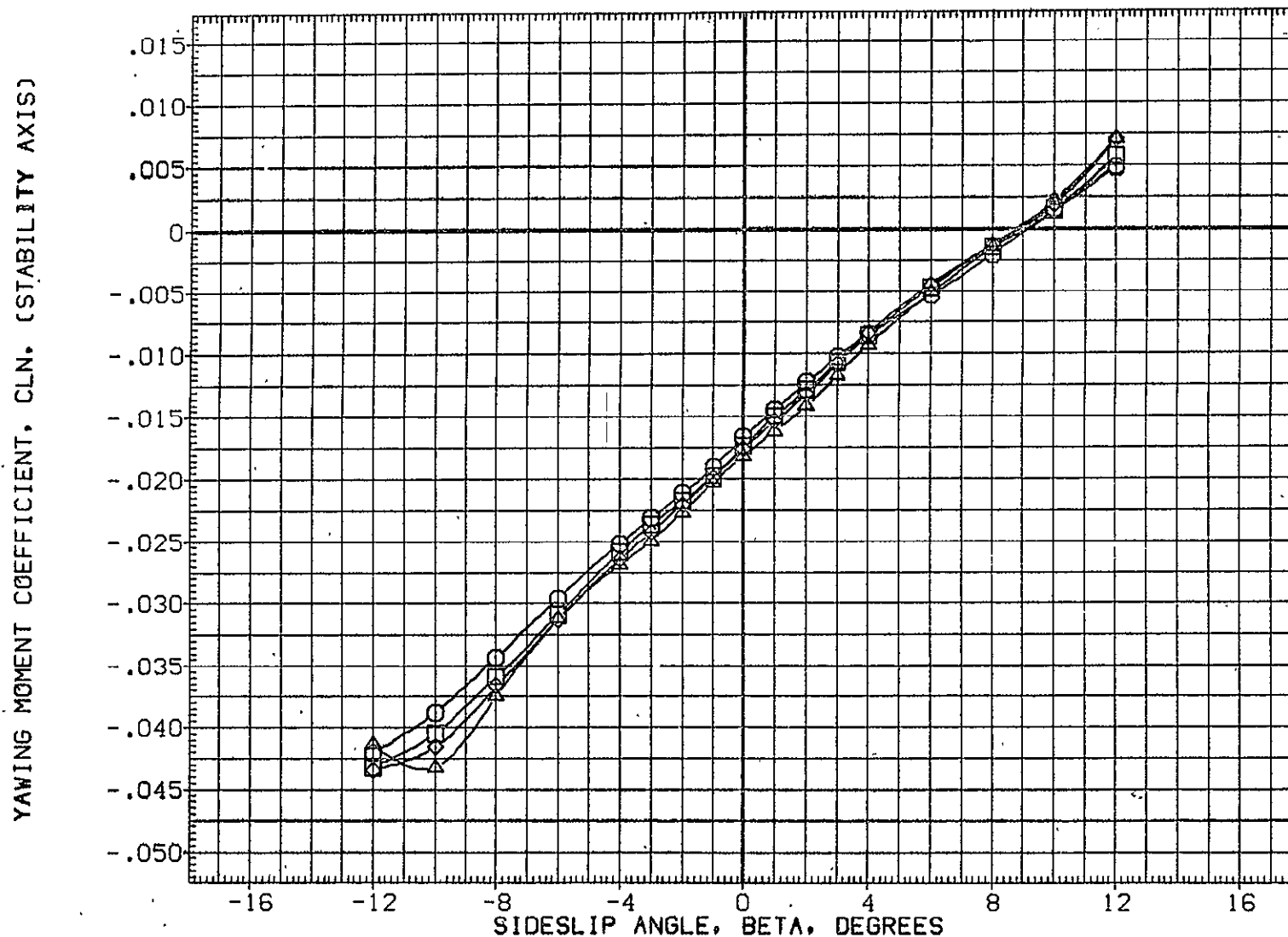


FIG.135 747+ORB(8 DEG)+TIP FINS+STD SPD BRK,FLAPS UP LAUNCH,ALPI=6,RUD=10/10 TOT

SYMBOL	MACH	PARAMETRIC VALUES				REFERENCE INFORMATION		
○	.300	ALPHA I	6.000	STAB	1.000	SREF	5500.0000	50. FT.
□	.500	RUD-U	10.000	RUD-L	10.000	LREF	327.8000	IN.
◇	.600	ELV-IB	.000	ELV-OB	3.000	BREF	2348.0000	IN.
△	.700	SI-2	.000	S3-4	45.000	XMRP	1339.9100	IN. XC
		S5-6	20.000	10RB	7.850	YMRP	.0000	IN. YC
						ZMRP	190.7500	IN. ZC
						SCALE	.0300	

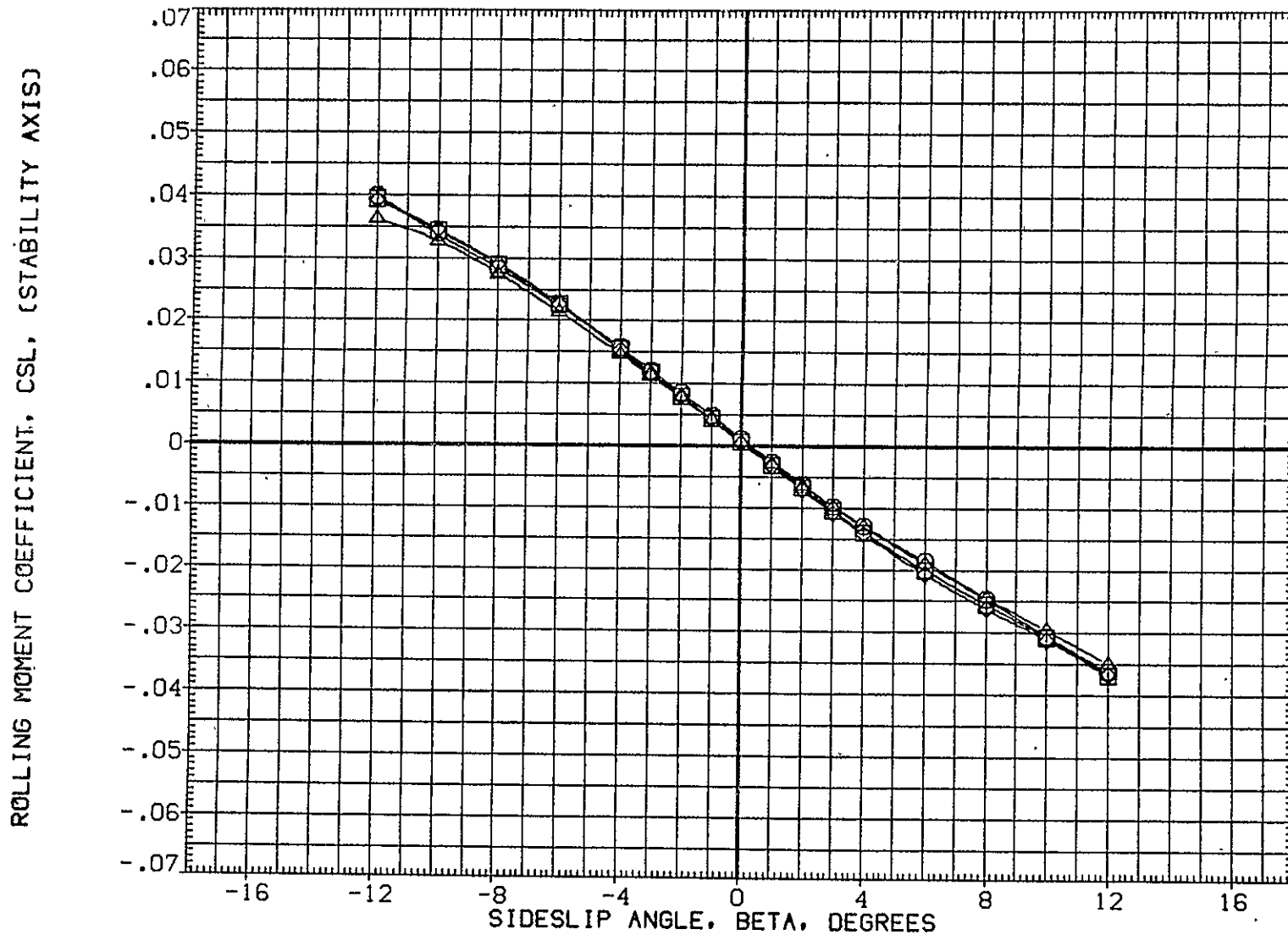


FIG.135 747+0RB(8 DEG)+TIP FINS+STD SPD BRK,FLAPS UP LAUNCH,ALPI=6,RUD=10/10 TOT

CA5 K1 F0 H15.6 V9.1 MINUS ORB TC5 AT38.2 (BGM086)

SYMBOL
○
□
◇
△

MACH

.300 ALPHA1
.500 RUD-U,
.600 ELV-1B
.700 S1-2
S5-6

PARAMETRIC VALUES

6.000 STAB 1.000
10.000 RUD-L 10.000
.000 ELV-OB 3.000
.000 S3-4 45.000
20.000 IORB 7.850

REFERENCE INFORMATION

SREF 5500.0000 SQ.FT.
LREF 327.8000 IN.
BREF 2348.0000 IN.
XMRP 1339.9100 IN. XC
YMRP .0000 IN. YC
ZMRP 190.7500 IN. ZC
SCALE .0300

INCREMENTAL SIDE FORCE COEFFICIENT(STABILITY AXIS), DCY

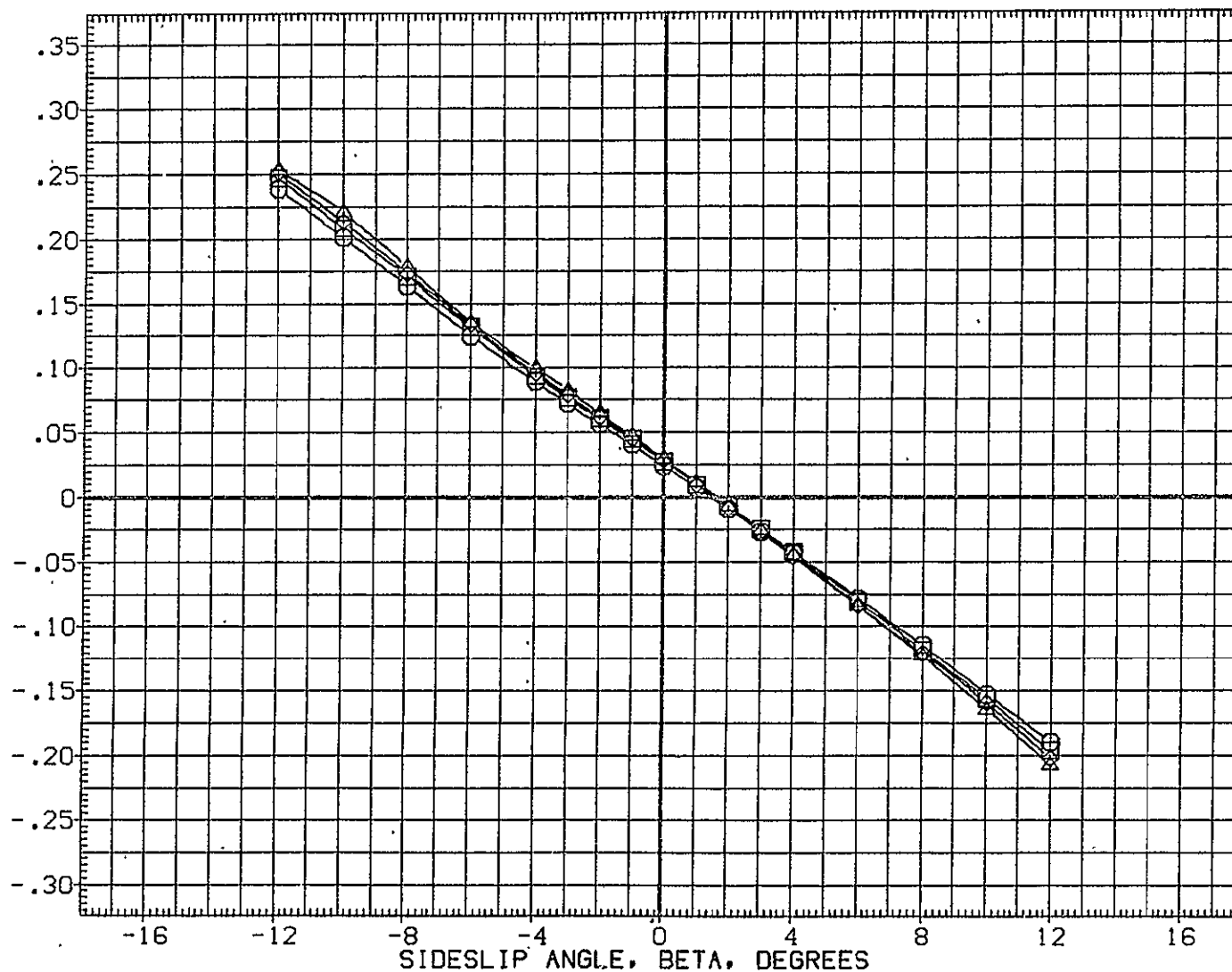


FIG.136 747+ORB(8 DEG)+TIP FINS+STD SPD BRK,FLAPS UP LAUNCH,ALPI=6,RUD=10/10 747

SYMBOL	MACH	PARAMETRIC VALUES
○	.300	ALPHA I 6.000 STAB 1.000
□	.500	RUD-U 10.000 RUD-L 10.000
◇	.600	ELV-1B .000 ELV-OB 3.000
△	.700	S1-2 .000 S3-4 45.000
		S5-6 20.000 10RB 7.850

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LRCF	327.8000	IN.
BREF	2348.0000	IN.
XMRF	1339.9100	IN. XC
YMRF	.0000	IN. YC
ZMRF	190.7500	IN. ZC
SCALE	.0300	

INCREMENTAL YAWING MOMENT COEFFICIENT (STABILITY AXIS), DCLN

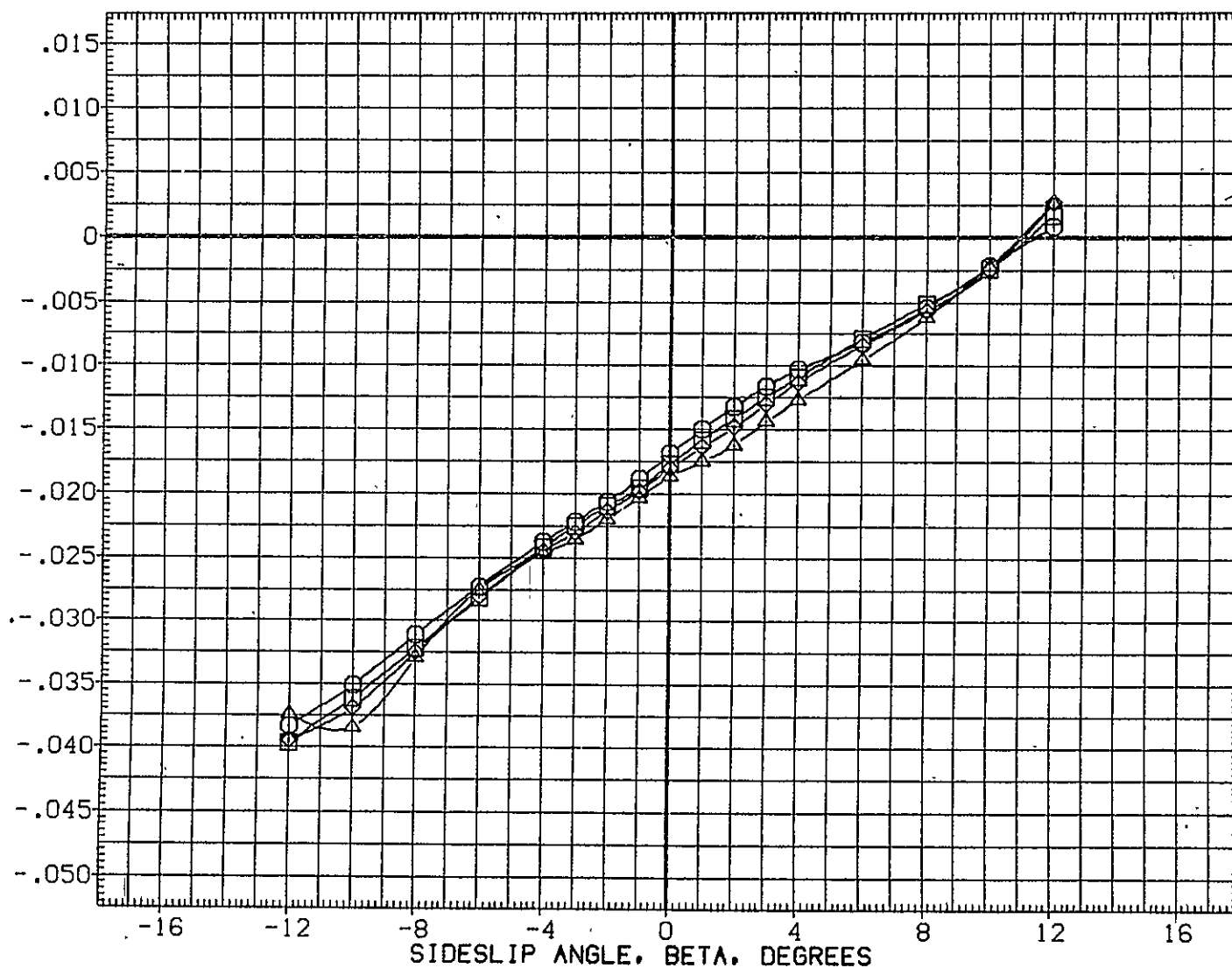


FIG.136 747+ORB(8 DEG)+TIP FINS+STD SPD BRK,FLAPS UP LAUNCH,ALPI=6,RUD=10/10 747

CA5 K1 F0 H15.6 V9.1 MINUS ORB TC5 AT38.2 (BGM086)

SYMBOL
○
□
◇
△

MACH	PARAMETRIC VALUES
.300	ALPHA I 6.000 STAB 1.000
.500	RUD-U 10.000 RUD-L 10.000
.600	ELV-IB .000 ELV-OB 3.000
.700	S1-2 .000 S3-4 45.000
	S5-6 20.000 TORB 7.850

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

INCREMENTAL ROLLING MOMENT COEFFICIENT(STABILITY AXIS), DCSL

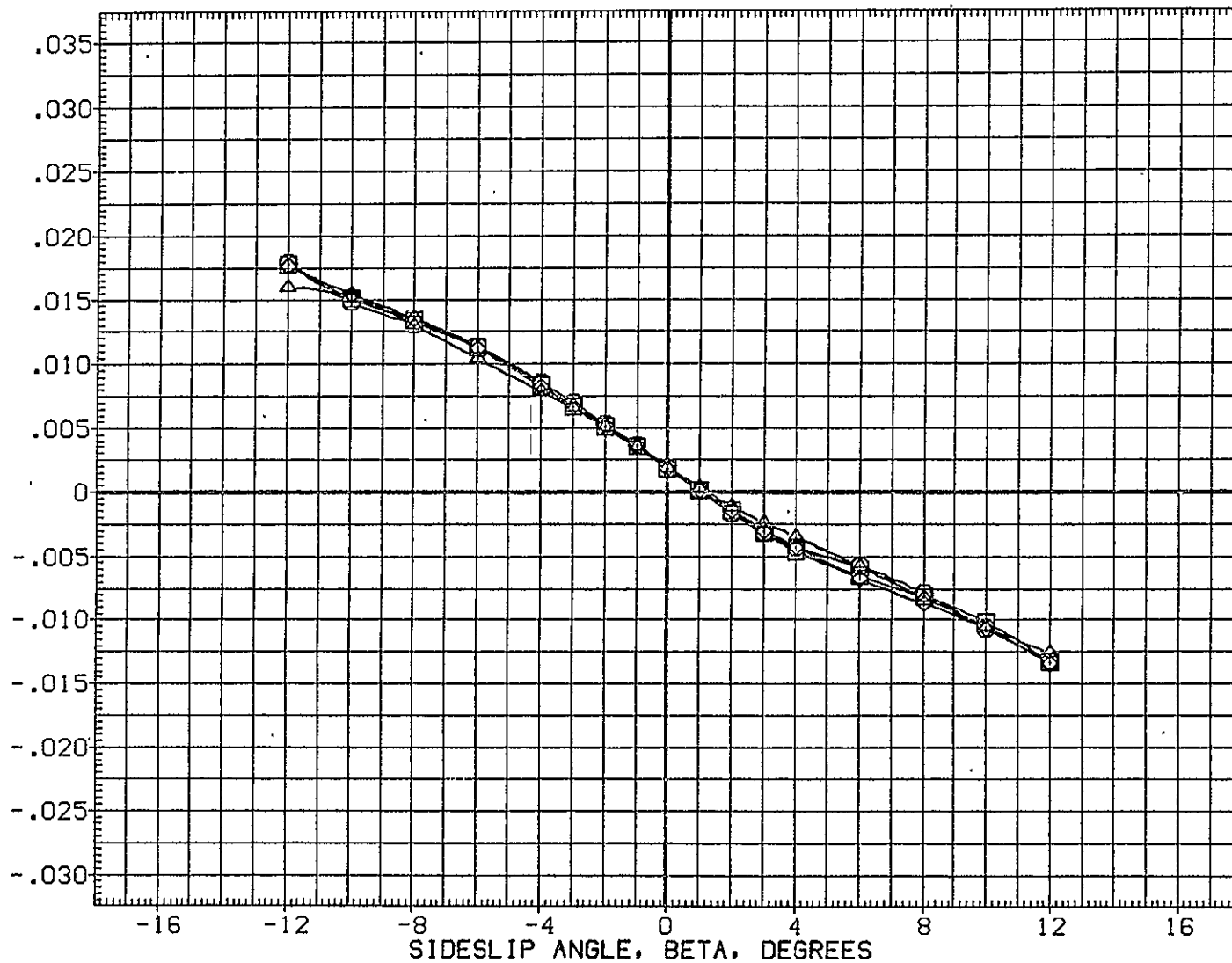


FIG.136 747+ORB(8 DEG)+TIP FINS+STD SPD BRK,FLAPS UP LAUNCH,ALPI=6,RUD=10/10 747

SYMBOL	MACH	PARAMETRIC VALUES				REFERENCE INFORMATION		
○	.300	ALPHA I	6.000	STAB	1.000	SREF	2690.0000	SQ.FT.
□	.499	RUD-U	10.000	RUD-L	10.000	LREF	474.8100	IN.
◇	.600	ELV-IB	.000	ELV-OB	3.000	BREF	936.6800	IN.
△	.700	S1-2	.000	S3-4	45.000	XMRP	1109.0000	IN. X0
		S5-6	20.000	10RB	7.850	YMRP	.0000	IN. Y0
						ZMRP	375.0000	IN. Z0
						SCALE	.0300	

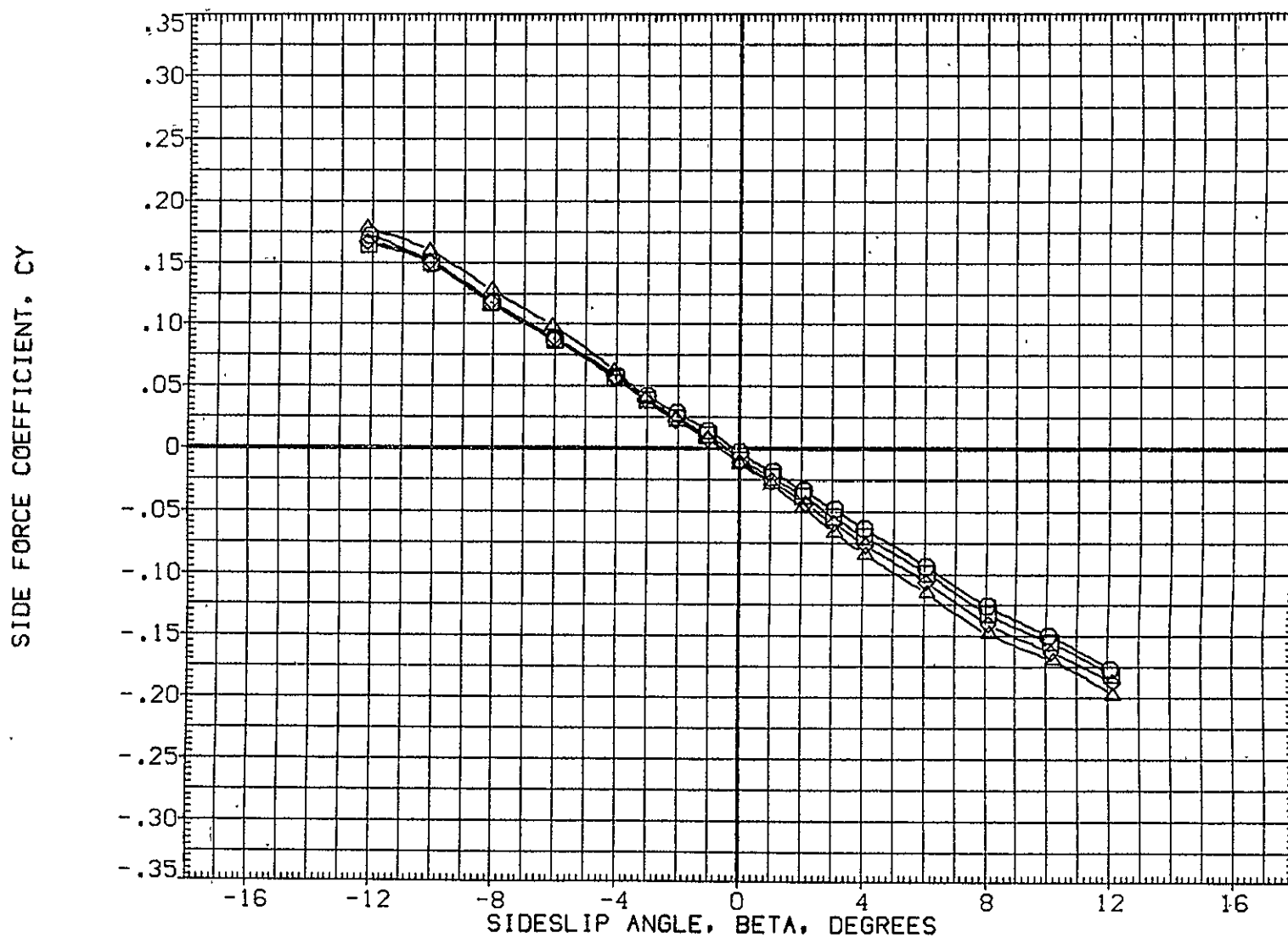


FIG.137 747+ORB(8 DEG)+TIP FINS+STD SPD BRK,FLAPS UP LAUNCH,ALPI=6,RUD=10/10 ORB

CA5 ORB TC5 AT38.2 (PRES. K1 F0 H15.6 V9.1)(XGM086)

SYMBOL
○
□
◇
△

MACH
.300
.499
.600
.700

ALPHA1
RUD-U
ELV-1B
S1-2
S5-6

PARAMETRIC VALUES
6.000
10.000
.000
.000
20.000

STAB 1.000
RUD-L 10.000
ELV-0B 3.000
S3-4 45.000
10RB 7.850

REFERENCE INFORMATION

SREF 2690.0000 SQ.FT.
LREF 474.8100 IN.
BREF 936.6800 IN.
XMRP 1109.0000 IN. X0
YMRP .0000 IN. Y0
ZMRP 375.0000 IN. Z0
SCALE .0300

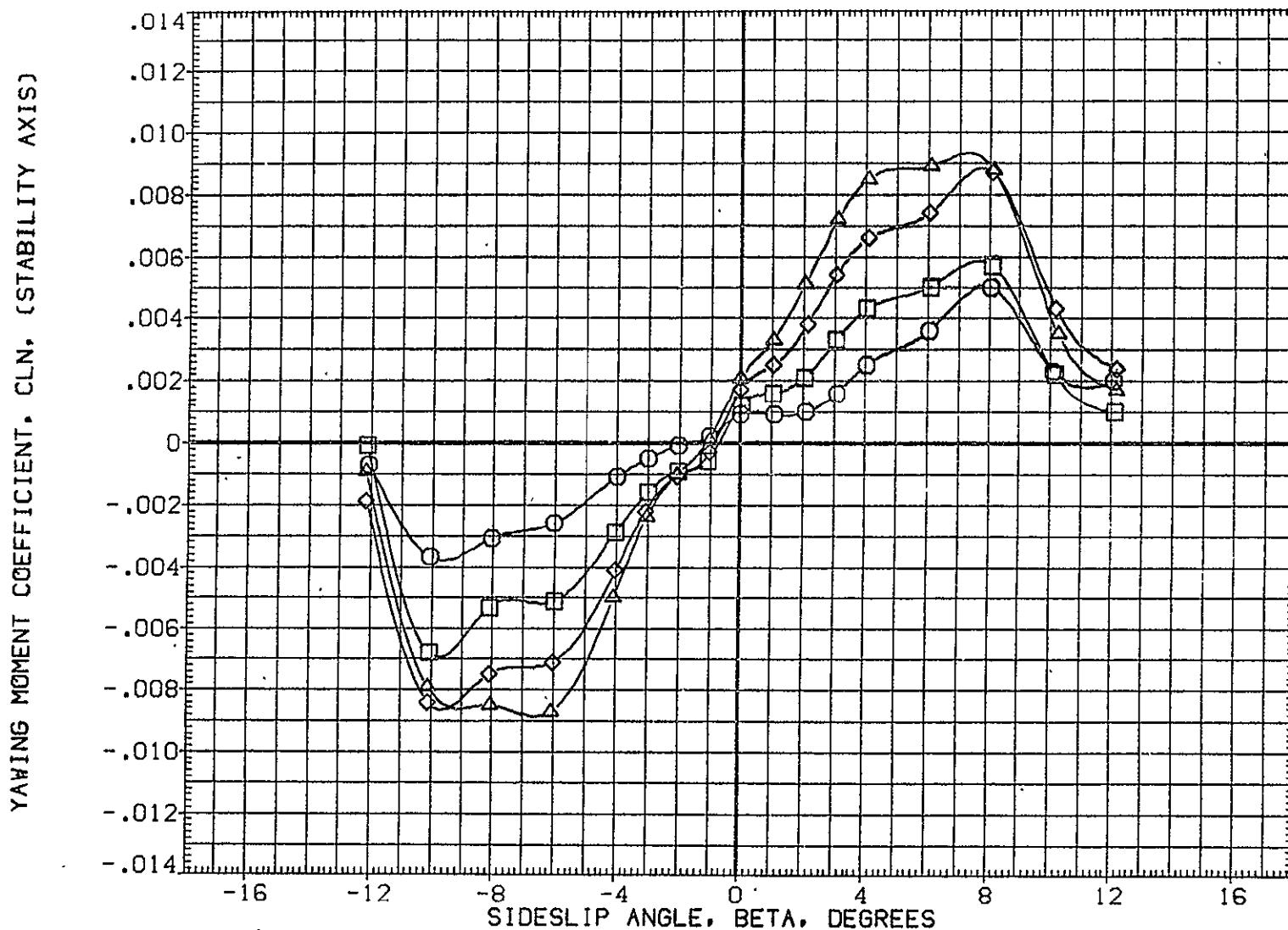


FIG.137 747+ORB(8 DEG)+TIP FINS+STD SPD BRK,FLAPS UP LAUNCH,ALPI=6,RUD=10,10 ORB

SYMBOL
○
□
◇
△

MACH

.300
.499
.600
.700

ALPHA1
RUD-U
ELV-1B
S1-2
S5-6

PARAMETRIC VALUES

6.000 STAB 1.000
10.000 RUD-L 10.000
.000 ELV-0B 3.000
.000 S3-4 45.000
20.000 10RB 7.850

REFERENCE INFORMATION

SREF 2690.0000 SQ.FT.
LREF 474.8100 IN.
BREF 936.6800 IN.
XMRP 1109.0000 IN. XG
YMRP .0000 IN. YG
ZMRP 375.0000 IN. ZG
SCALE .0300

ROLLING MOMENT COEFFICIENT, CSL, (STABILITY AXIS)

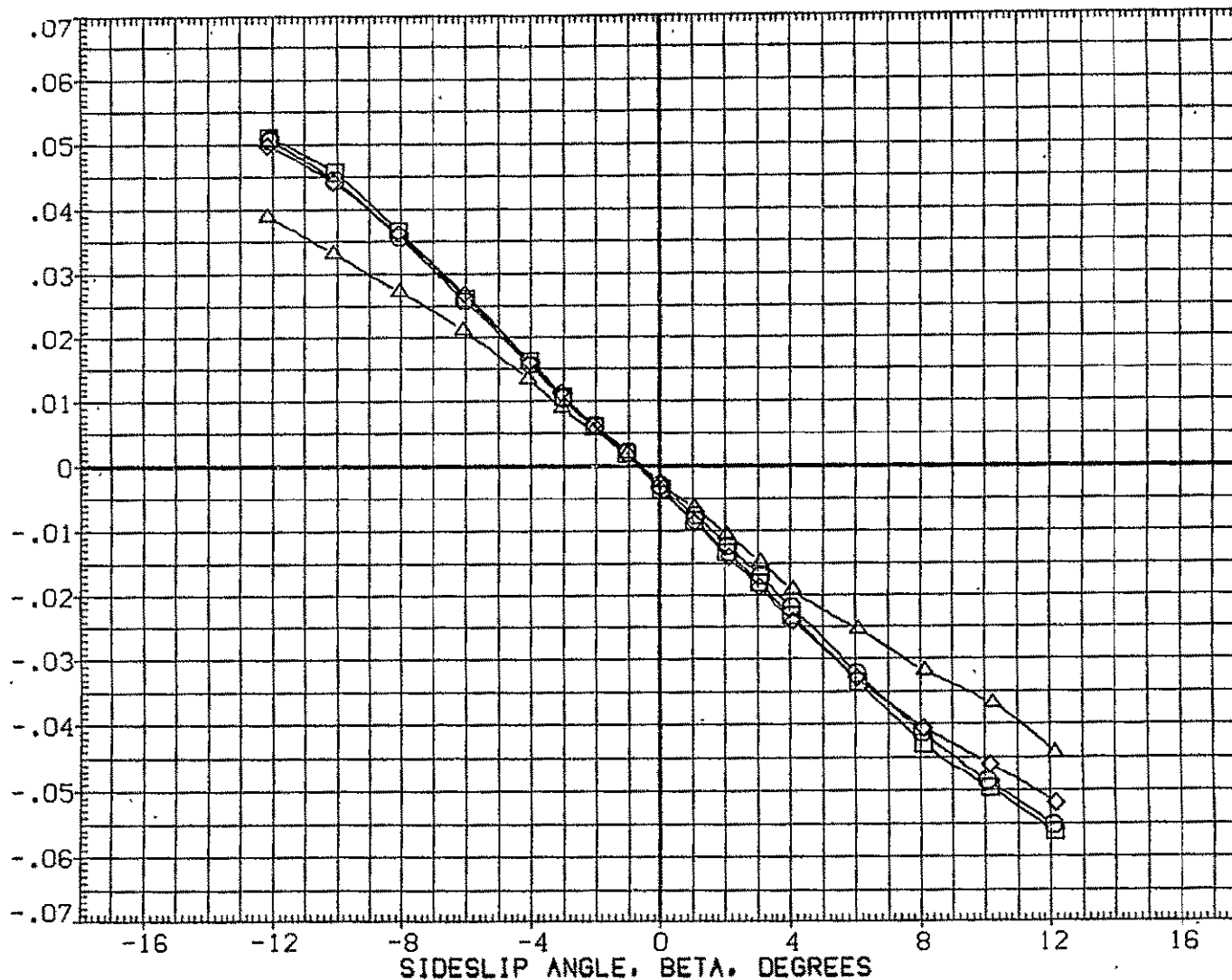


FIG.137 747+0RB(8 DEG)+TIP FINS+STD SPD BRK,FLAPS UP LAUNCH,ALPI=6,RUD=10/10 ORB

CA5 K1 F0 H15.6 V9.1 (PLUS. 0RB TC5 AT38.2)(RGM089)

SYMBOL

○
□
◇
△

MACH

.300
.500
.600
.700

ALPHA1
RUD-U
ELV-0B
S3-4
10RB

PARAMETRIC VALUES

6.000
.000
3.000
.000
7.850

STAB
ELV-1B
S1-2
S5-6
0RBELV

1.000
.000
.000
.000
.000

REFERENCE INFORMATION

SREF 5500.0000 SQ.FT.
LREF 327.8000 IN.
BREF 2348.0000 IN.
XMRP 1339.9100 IN. XC
YMRP .0000 IN. YC
ZMRP 190.7500 IN. ZC
SCALE .0300

SIDE FORCE COEFFICIENT, CY

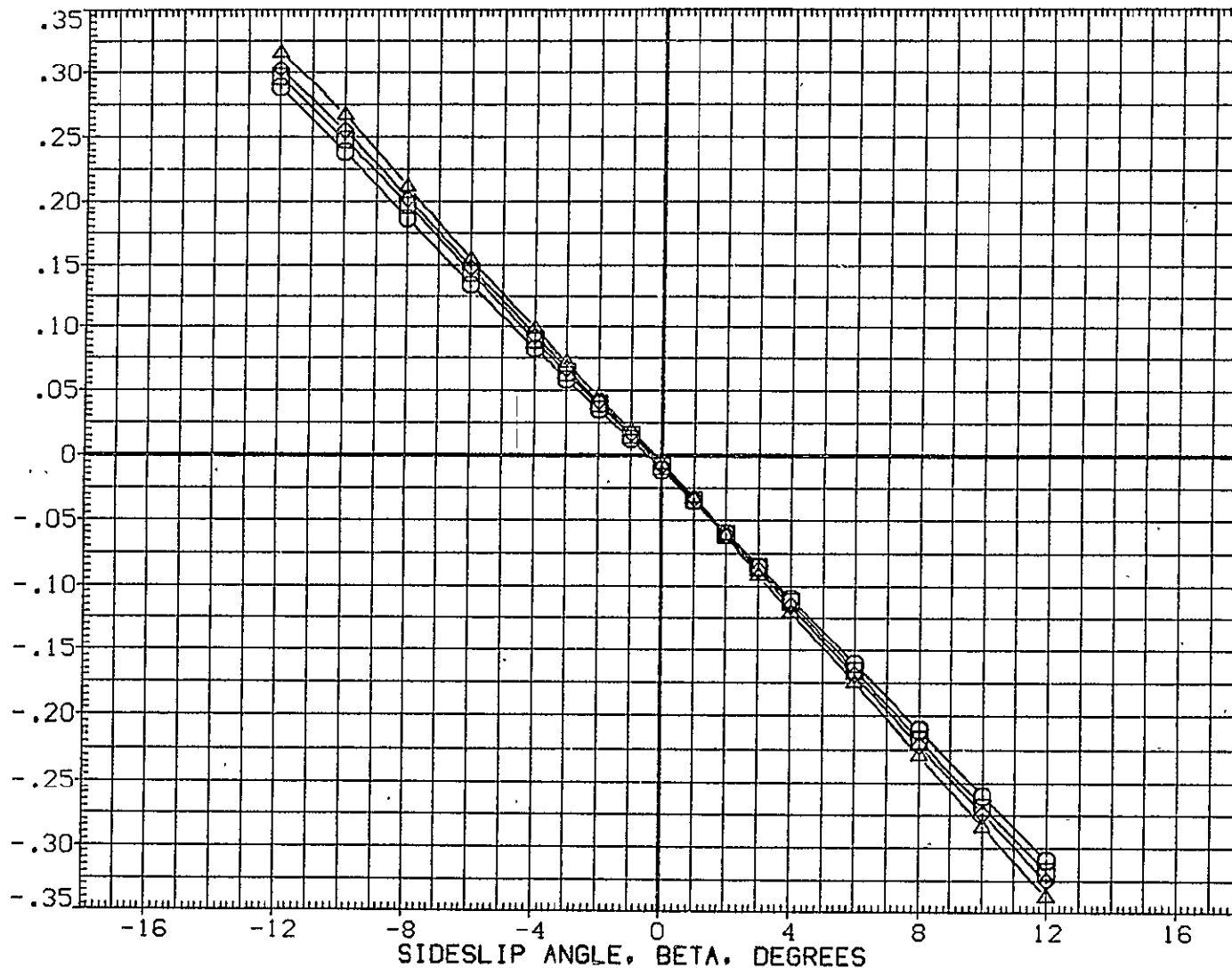


FIG.138 747+0RB(8 DEG)+TIP FINS,FLAPS UP LAUNCH,ALPHA1= 6 DEG

TOTAL

SYMBOL	MACH	PARAMETRIC VALUES	REFERENCE INFORMATION
○	.300	ALPHA1 6.000 STAB 1.000	SREF 5500.0000 SQ.FT.
□	.500	RUD-U .000 ELV-1B .000	LREF 327.8000 IN.
◇	.600	ELV-0B 3.000 S1-2 .000	BREF 2348.0000 IN.
△	.700	S3-4 .000 S5-6 .000	XM RP 1339.9100 IN. XC
		10RB 7.850 ORBELV .000	YM RP .0000 IN. YC
			ZM RP 190.7500 IN. ZC
			SCALE .0300

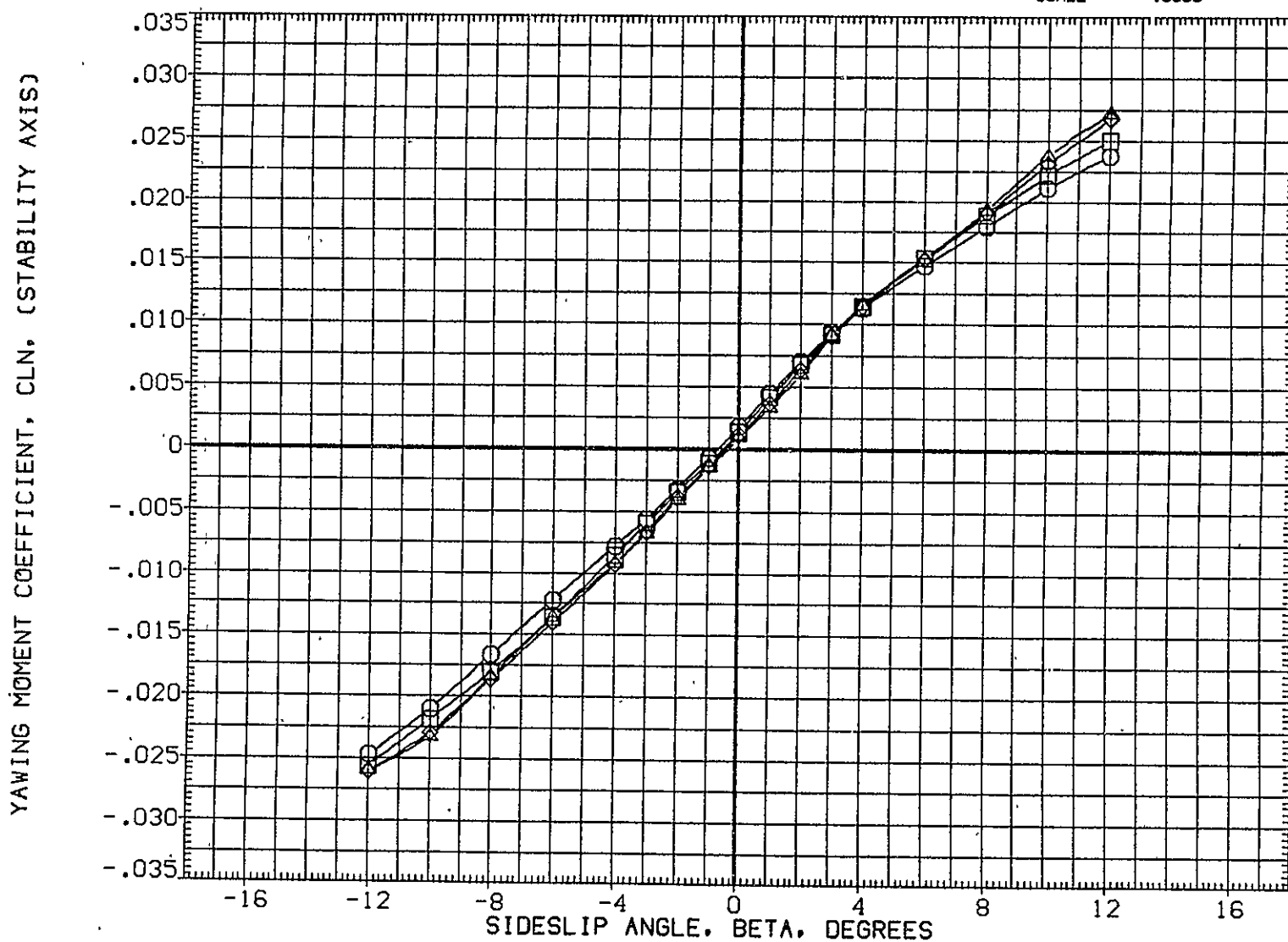


FIG.138 747+ORB(8 DEG)+TIP FINS,FLAPS UP LAUNCH,ALPHA1= 6 DEG

CA5 K1 F0 H15.6 V9.1 (PLUS. 0RB TC5 AT38.2)(RGM089)

SYMBOL	MACH	PARAMETRIC VALUES	REFERENCE INFORMATION
○	.300	ALPHA1 6.000 STAB 1.000	SREF 5500.0000 SQ.FT.
□	.500	RUD-U .000 ELV-1B .000	LREF 327.8000 IN.
◇	.600	ELV-0B 3.000 SI-2 .000	BREF 2348.0000 IN.
△	.700	S3-4 .000 S5-6 .000	XMRP 1339.9100 IN. XC
		IORB 7.850 ORBELV .000	YMRP .0000 IN. YC
			ZMRP 190.7500 IN. ZC
			SCALE .0300

ROLLING MOMENT COEFFICIENT, CSL, (STABILITY AXIS)

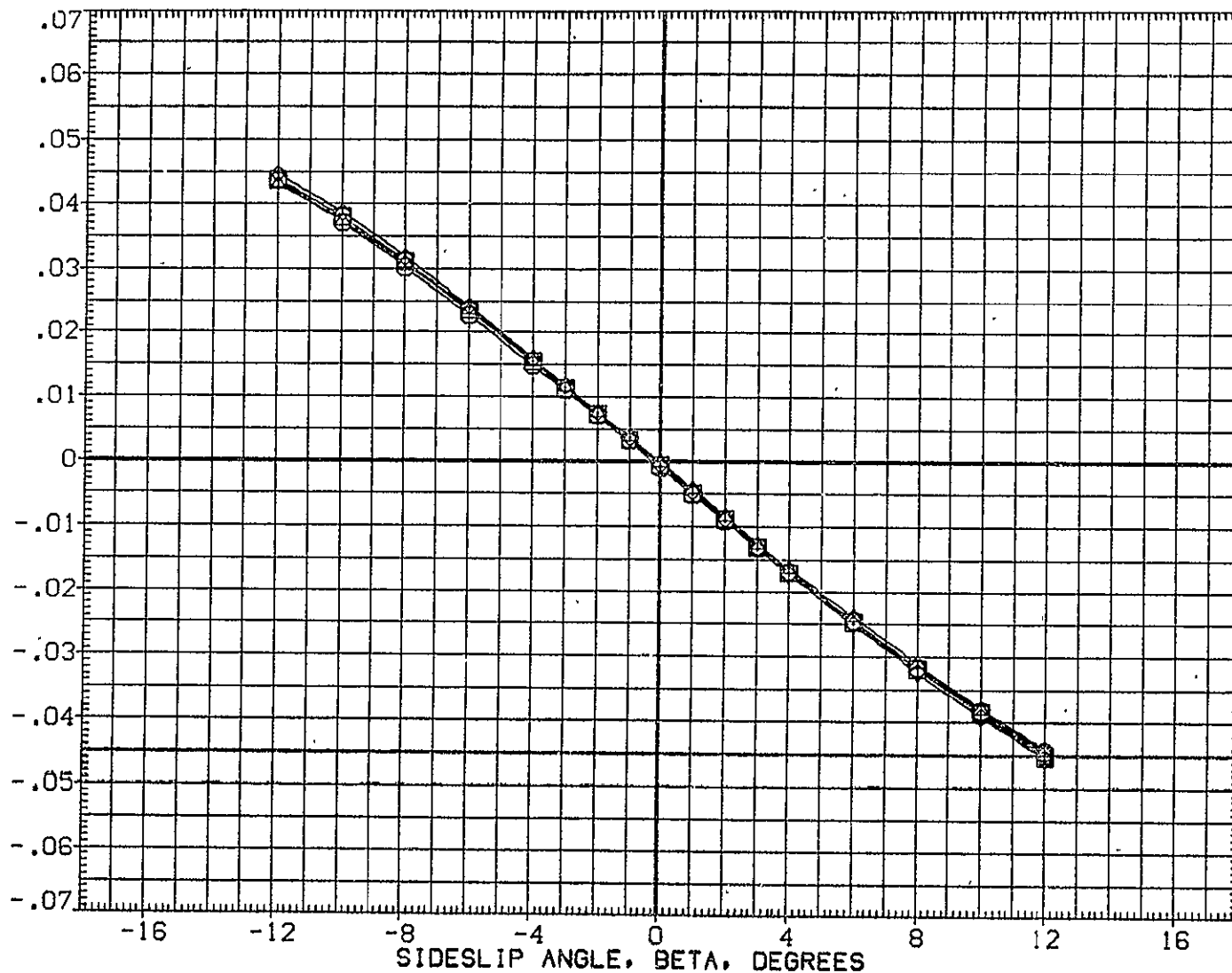


FIG.138 747+0RB(8 DEG)+TIP FINS,FLAPS UP LAUNCH,ALPHA1= 6 DEG

TOTAL

SYMBOL

○
□
◇
△

MACH

.300
.500
.600
.700ALPHA1
RUD-U
ELV-08
S3-4
IORB

PARAMETRIC VALUES

6.000 STAB 1.000
.000 ELV-1B .000
3.000 S1-2 .000
.000 S5-6 .000
7.850 ORBELV .000

REFERENCE INFORMATION

SREF	5500.0000	SQ.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

INCREMENTAL SIDE FORCE COEFFICIENT(STABILITY AXIS), DCY

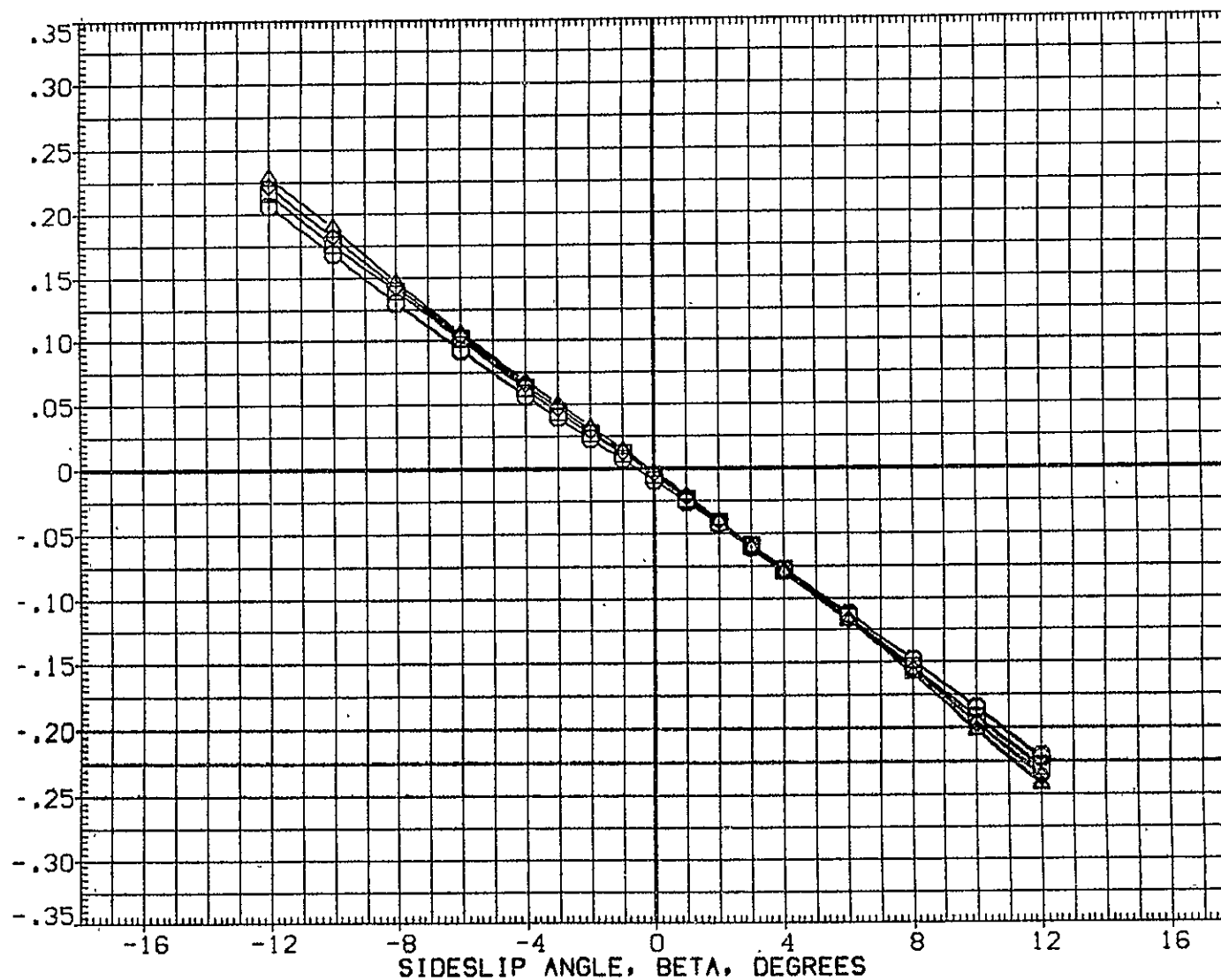


FIG.139 747+ORB(8 DEG)+TIP FINS,FLAPS UP LAUNCH,ALPHA1= 6 DEG

747

CA5 K1 F0 H15.6 V9.1 MINUS ORB TC5 AT38.2 (BGM089)

SYMBOL	MACH	PARAMETRIC VALUES
○	.300	ALPHA I 6.000 STAB 1.000
□	.500	RUD-U .000 ELV-1B .000
◇	.600	ELV-0B 3.000 S1-2 .000
△	.700	S3-4 .000 S5-6 .000
		10RB 7.850 ORBELV .000

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.8000	IN.
BREF	2349.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

INCREMENTAL YAWING MOMENT COEFFICIENT(STABILITY AXIS), DCLN

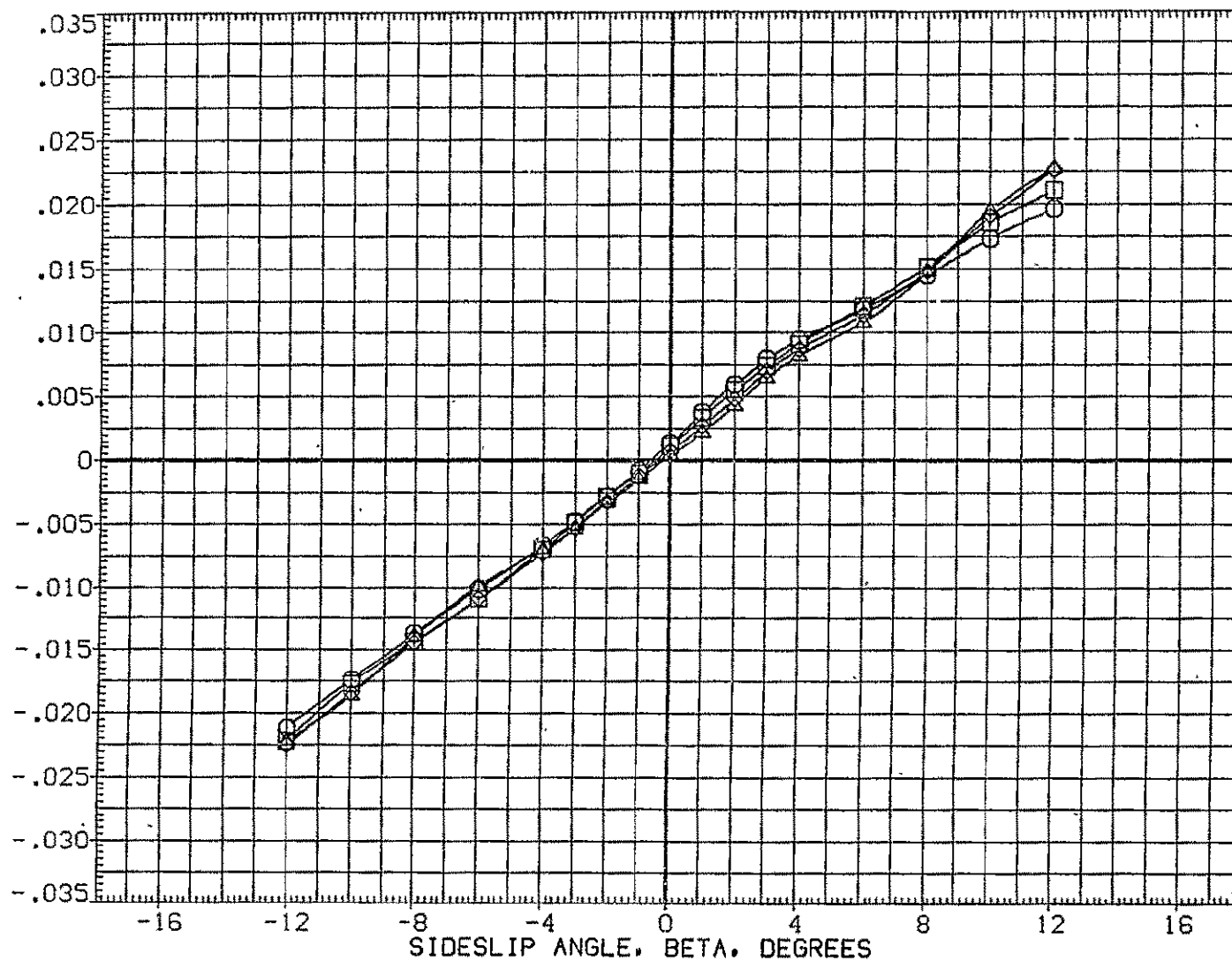


FIG.139 747+ORB(8 DEG)+TIP FINS,FLAPS UP LAUNCH,ALPHA I= 6 DEG .

747

SYMBOL		MACH	PARAMETRIC VALUES			
○		.300	ALPHA1	6.000	STAB	1.000
□		.500	RUD-U	.000	ELV-1B	.000
◇		.600	ELV-OB	3.000	S1-2	.000
△		.700	S3-4	.000	S5-6	.000
			IORB	7.850	ORBELV	.000

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XM RP	1339.9100	IN. XC
YM RP	.0000	IN. YC
ZM RP	190.7500	IN. ZC
SCALE	.0300	

INCREMENTAL ROLLING MOMENT COEFFICIENT(STABILITY AXIS), DCSL

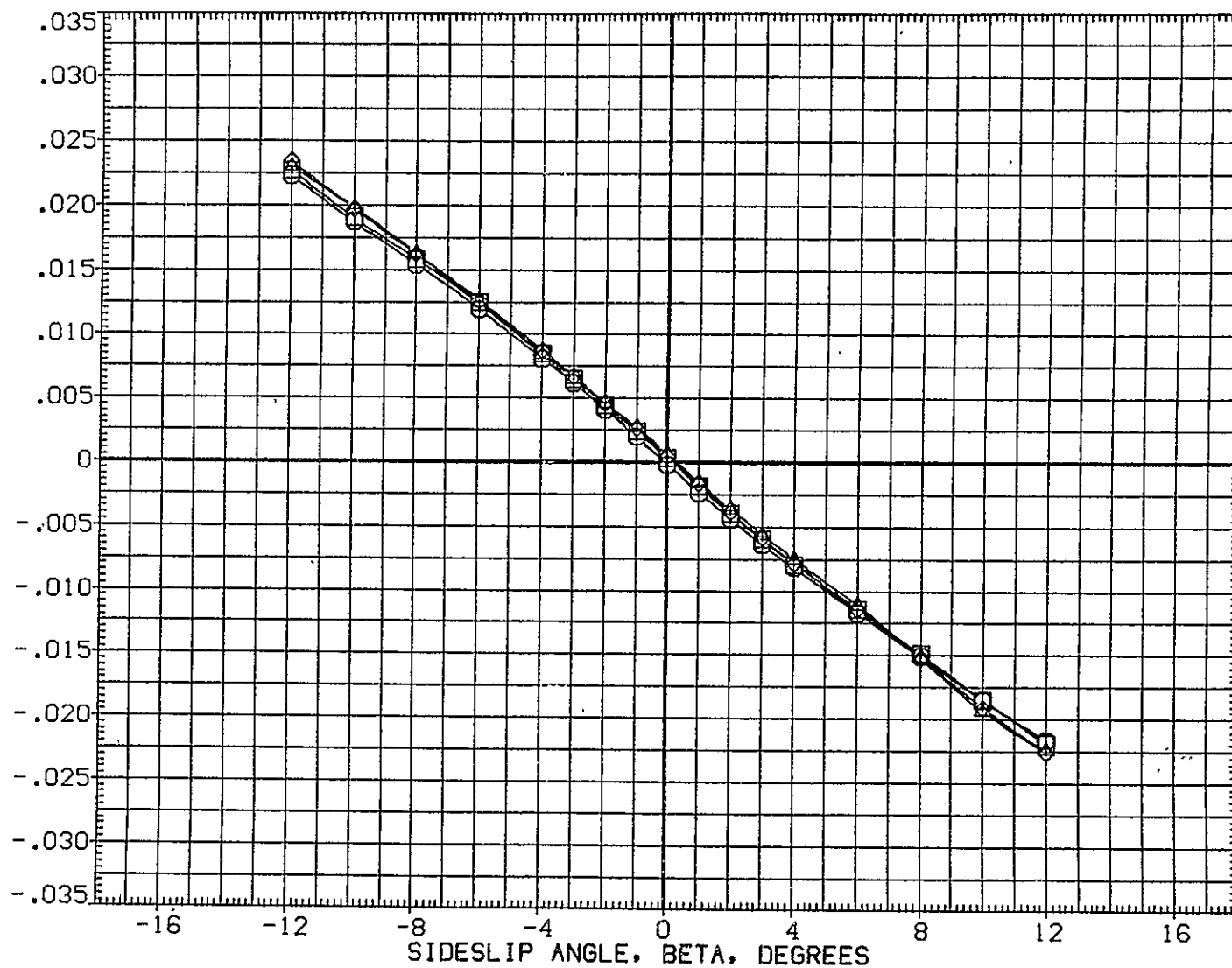


FIG.139 747+ORB(8 DEG)+TIP FINS,FLAPS UP LAUNCH,ALPHA1= 6 DEG

747

CA5 ORB TC5 AT38.2 (PRES. K1 FO H15.6 V9.1)(XGM089)

SYMBOL	MACH	PARAMETRIC VALUES	REFERENCE INFORMATION
○	.300	ALPHA1 6.000 STAB 1.000	SREF 2690.0000 SQ.FT.
□	.499	RUD-U .000 ELV-18 .000	LREF 474.8100 IN.
◇	.600	ELV-08 3.000 SI-2 .000	BREF 936.6800 IN.
△	.700	S3-4 .000 S5-6 .000	XMRP 1109.0000 IN. X0
		10RB 7.850 ORBELV .000	YMRP .0000 IN. Y0
			ZMRP 375.0000 IN. Z0
			SCALE .0300

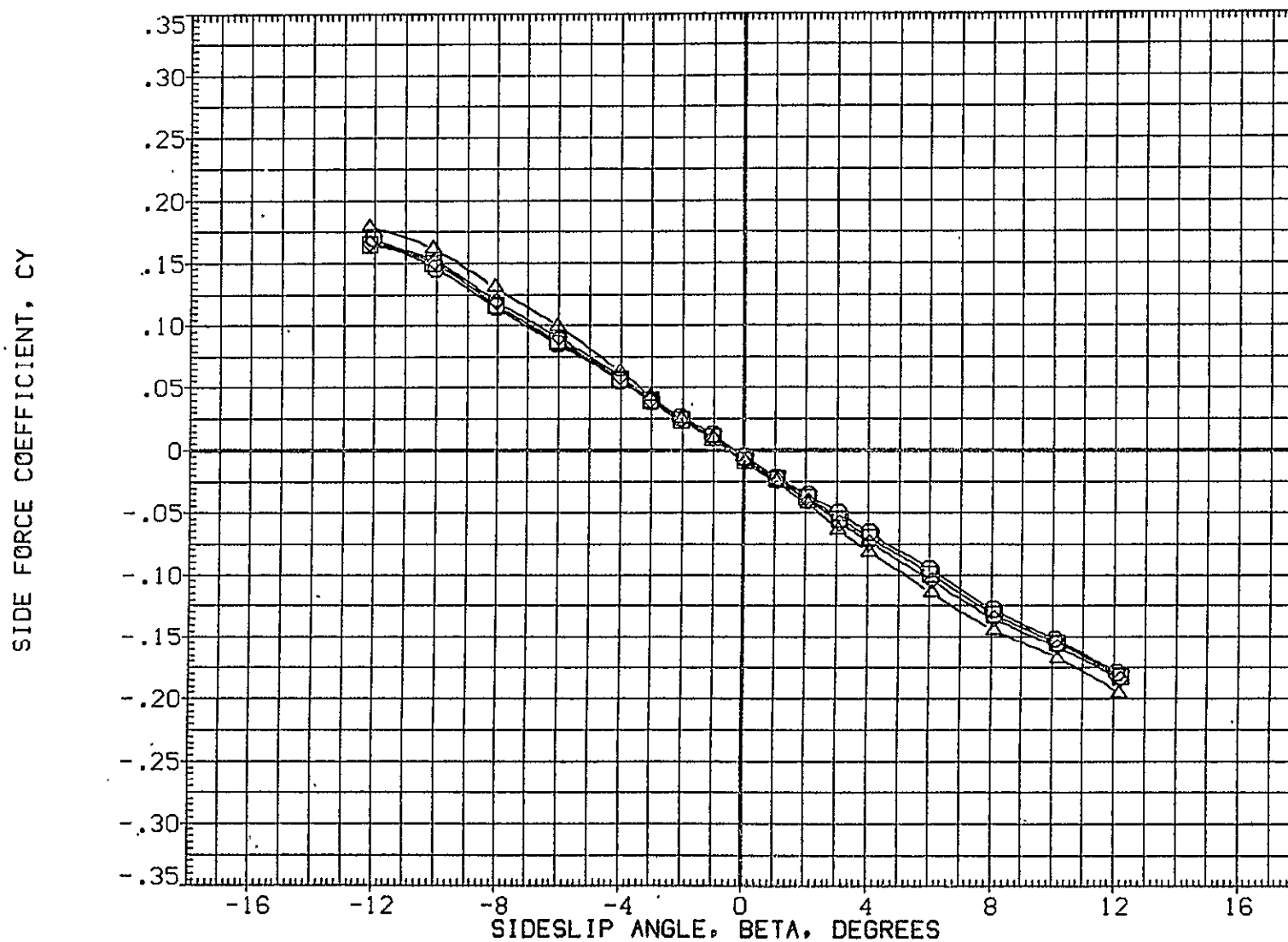


FIG.140 747+ORB(8 DEG)+TIP FINS,FLAPS UP LAUNCH,ALPHA1= 6 DEG

ORB

SYMBOL	MACH	PARAMETRIC VALUES
○	.300	ALPHA1 6.000 STAB 1.000
□	.499	RUD-U .000 ELV-1B .000
◇	.600	ELV-OB 3.000 SI-2 .000
△	.700	S3-4 .000 S5-6 .000
		IORB 7.850 ORBELV .000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN. X0
YMRP	.0000	IN. Y0
ZMRP	375.0000	IN. Z0
SCALE	.0300	

YAWING MOMENT COEFFICIENT, CLN, (STABILITY AXIS)

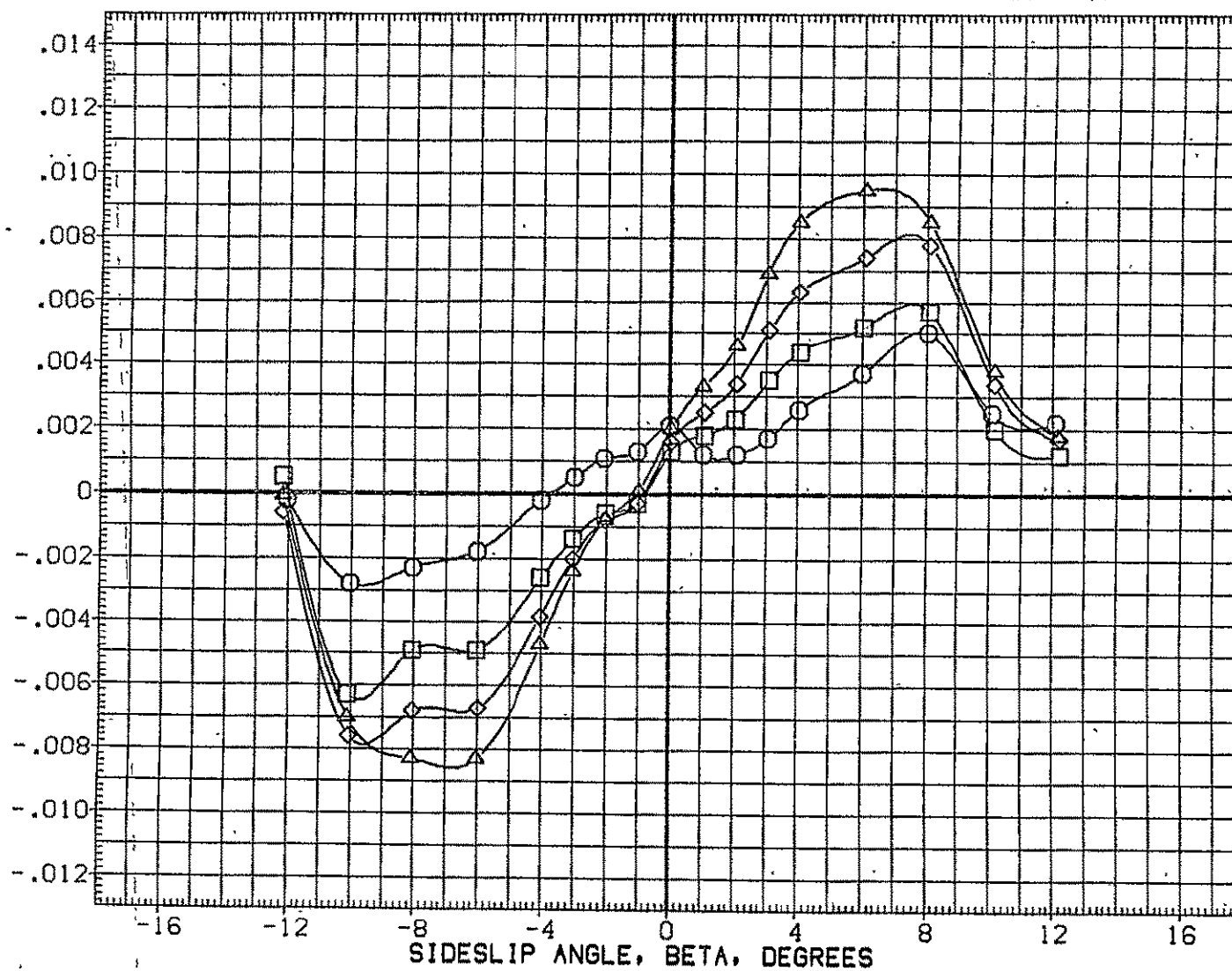


FIG.140 747+ORB(8 DEG)+TIP FINS,FLAPS UP LAUNCH,ALPHA1= 6 DEG

ORB

CA5 ORB TC5 AT38.2 (PRES. K1 F0 H15.6 V9.1)(XGM089)

SYMBOL	MACH	PARAMETRIC VALUES	REFERENCE INFORMATION
○	.300	ALPHA1 6.000 STAB 1.000	SREF 2690.0000 SQ.FT.
□	.499	RUD-U .000 ELV-1B .000	LREF 474.8100 IN.
◇	.600	ELV-0B 3.000 S1-2 .000	BREF 936.6800 IN.
△	.700	S3-4 .000 S5-6 .000	XMRP 1109.0000 IN. X0
		10RB 7.850 ORBELV .000	YMRP .0000 IN. Y0
			ZMRP 375.0000 IN. Z0
			SCALE .0300

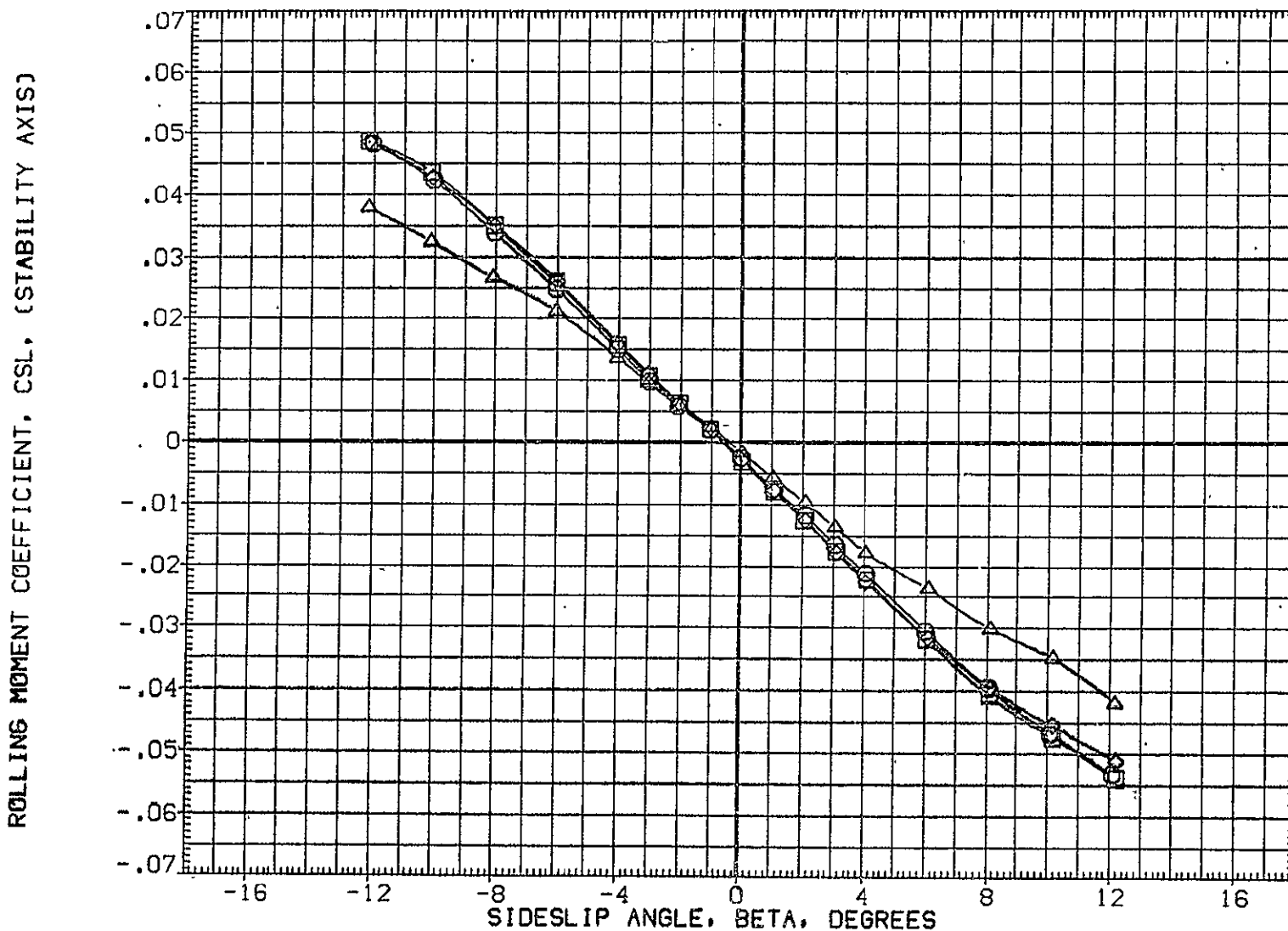


FIG.140 747+ORB(8 DEG)+TIP FINS,FLAPS UP LAUNCH,ALPHA1= 6 DEG

ORB

SYMBOL	MACH	PARAMETRIC VALUES	REFERENCE INFORMATION
○	.300	ALPHA1 6.000 STAB 1.000	SREF 5500.0000 SQ.FT.
□	.500	RUD-U .000 RUD-L .000	LREF 327.8000 IN.
◇	.600	ELV-IB .000 ELV-OB 3.000	BREF 2348.0000 IN.
△	.700	S1-2 .000 S3-4 45.000	XMRP 1339.9100 IN. XC
		S5-6 20.000 TORB 7.850	YMRP .0000 IN. YC
			ZMRP 190.7500 IN. ZC
			SCALE .0300

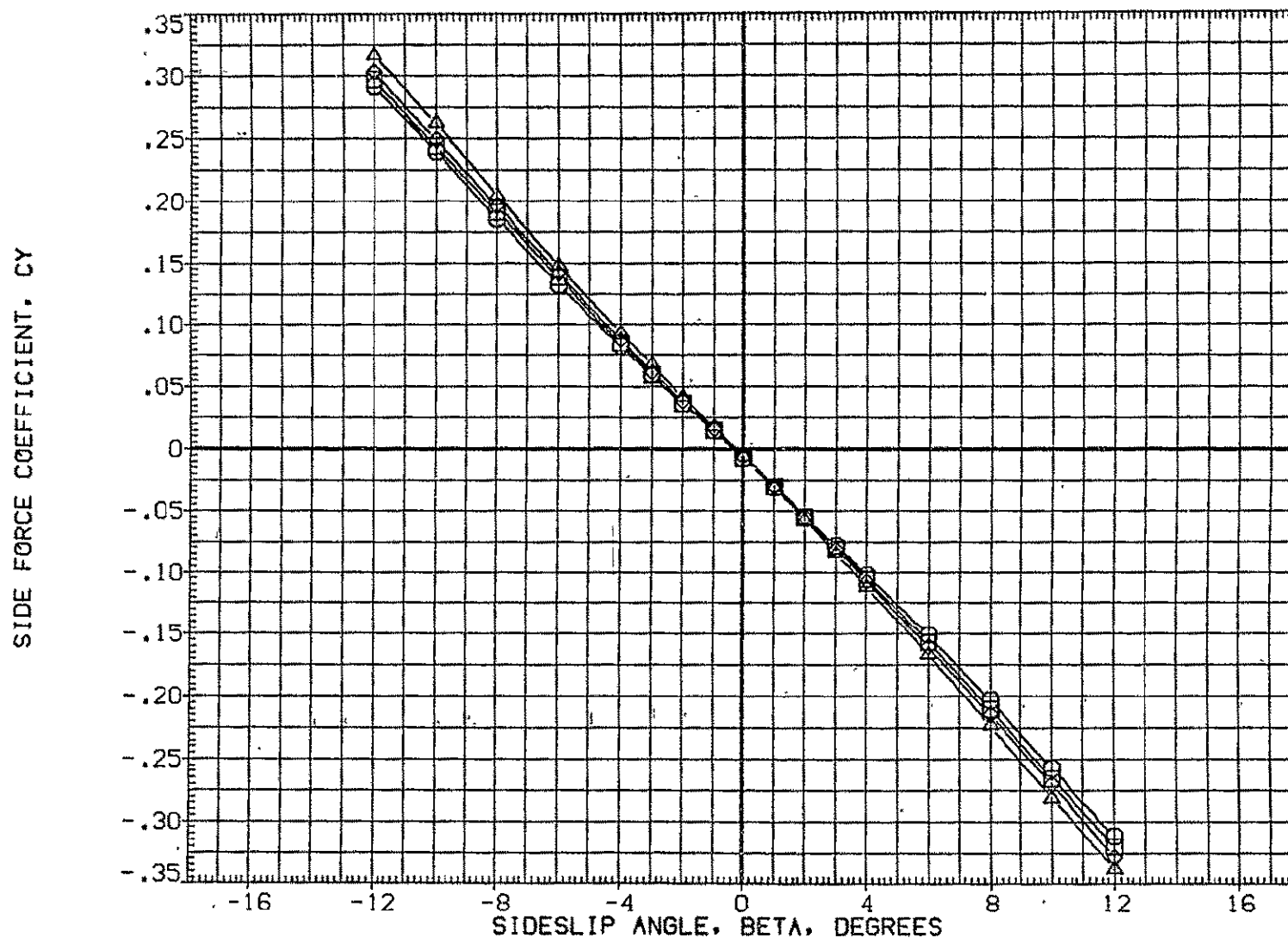


FIG.141 747+ORB(8 DEG)+TIP FINS+STD SPD BRK,FLAPS UP LAUNCH,ALPHA1=6,TC OFF TOT

CA5 K1 FO H15.6 V9.1 (PLUS. ORB NOZ AT38.2)(RGM093)

SYMBOL	MACH	PARAMETRIC VALUES	REFERENCE INFORMATION
○	.300	ALPHA1 6.000 STAB 1.000	SREF 5500.0000 SQ.FT.
□	.500	RUD-U .000 RUD-L .000	LREF 327.8000 IN.
◇	.600	ELV-IB .000 ELV-OB 3.000	BREF 2348.0000 IN.
△	.700	S1-2 .000 S3-4 45.000	XMRP 1339.9100 IN. XC
		S5-6 20.000 IORB 7.850	YMRP .0000 IN. YC
			ZMRP 190.7500 IN. ZC
			SCALE .0300

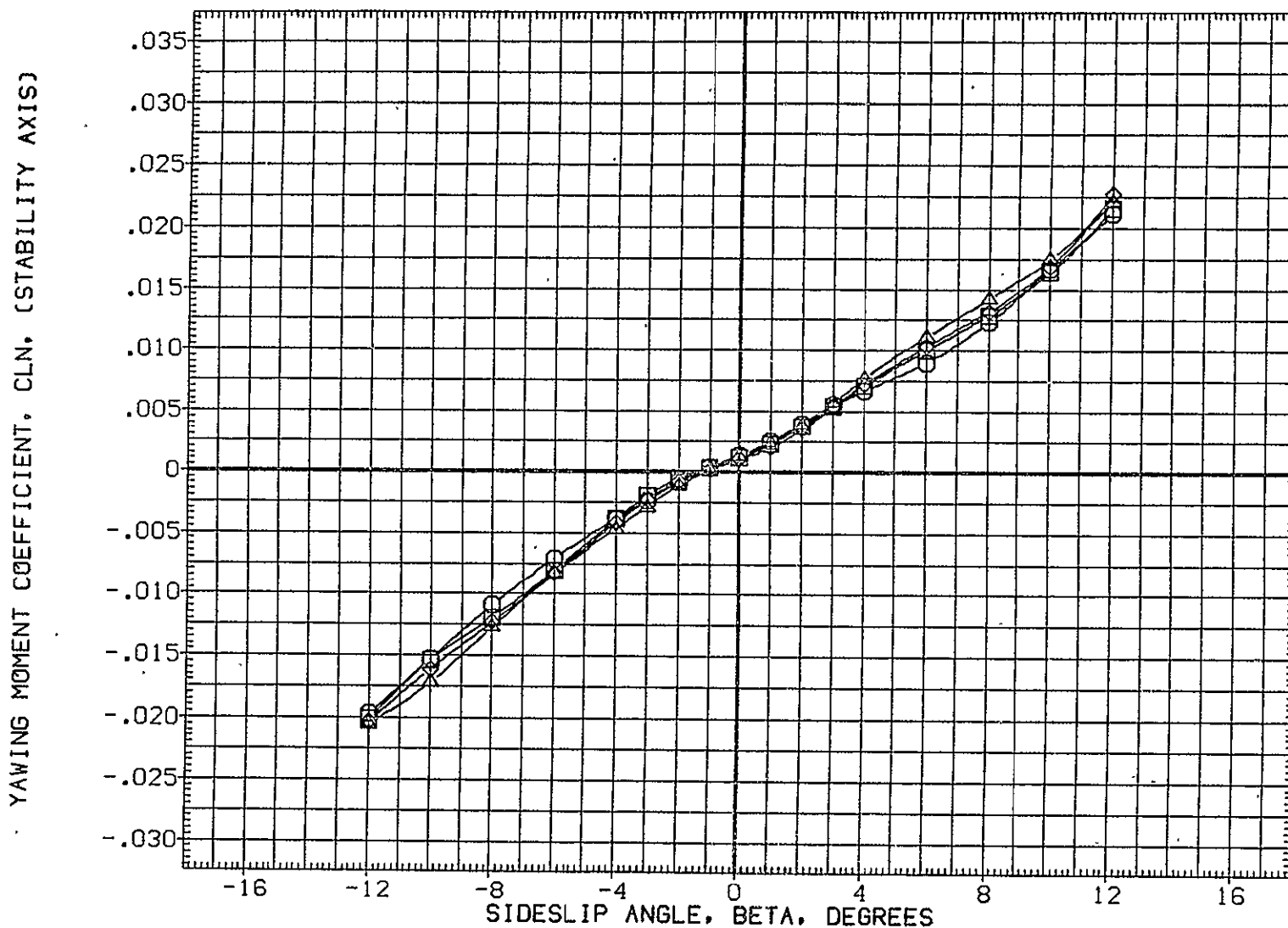


FIG.141 747+ORB(8 DEG)+TIP FINS+STD SPD BRK,FLAPS UP LAUNCH,ALPHA1=6,TC OFF TOT

SYMBOL

MACH

PARAMETRIC VALUES

REFERENCE INFORMATION

○
□
◇
△

.300	ALPHA I	6.000	STAB	1.000
.500	RUD-U	.000	RUD-L	.000
.600	ELV-1B	.000	ELV-0B	3.000
.700	S1-2	.000	S3-4	45.000
	S5-6	20.000	10RB	7.850

SREF	5500.0000	SQ.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

ROLLING MOMENT COEFFICIENT, CSL, (STABILITY AXIS)

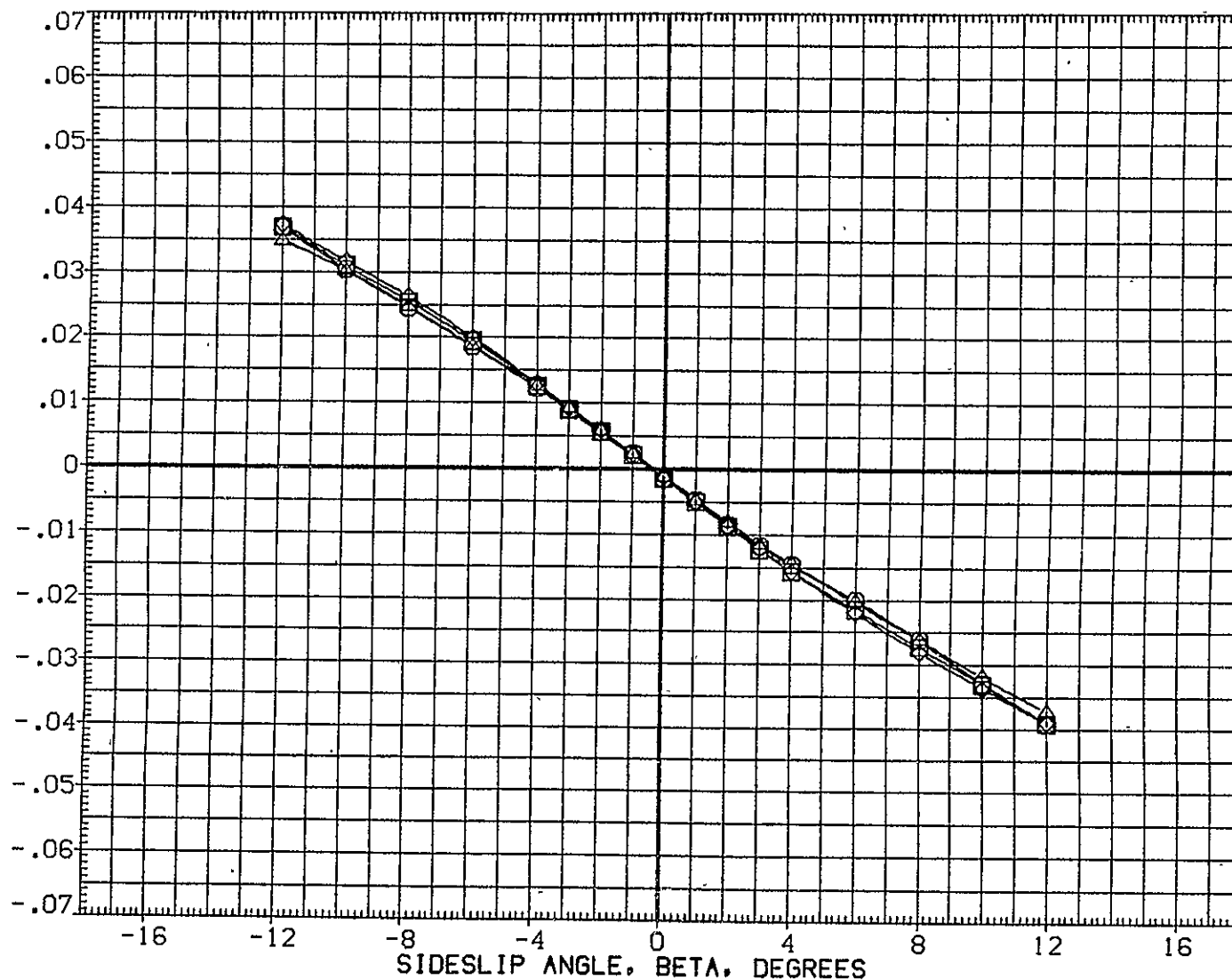


FIG.141 747+ORB(8 DEG)+TIP FINS+STD SPD BRK,FLAPS UP LAUNCH,ALPHA I=6,TC OFF TOT

CA5 K1 F0 H15.6 V9.1 MINUS 0RB N0Z AT38.2 (BGM093)

SYMBOL	MACH	PARAMETRIC VALUES				REFERENCE INFORMATION		
○	.300	ALPHA1	6.000	STAB	1.000	SREF	5500.0000	SQ.FT.
□	.500	RUD-U	.000	RUD-L	.000	LREF	327.8000	IN.
◇	.600	ELV-IB	.000	ELV-OB	3.000	BREF	2348.0000	IN.
△	.700	S1-2	.000	S3-4	45.000	XMRP	1339.9100	IN. XC
		S5-6	20.000	10RB	7.850	YMRP	.0000	IN. YC
						ZMRP	190.7500	IN. ZC
						SCALE	.0300	

INCREMENTAL SIDE FORCE COEFFICIENT(STABILITY AXIS), DCY

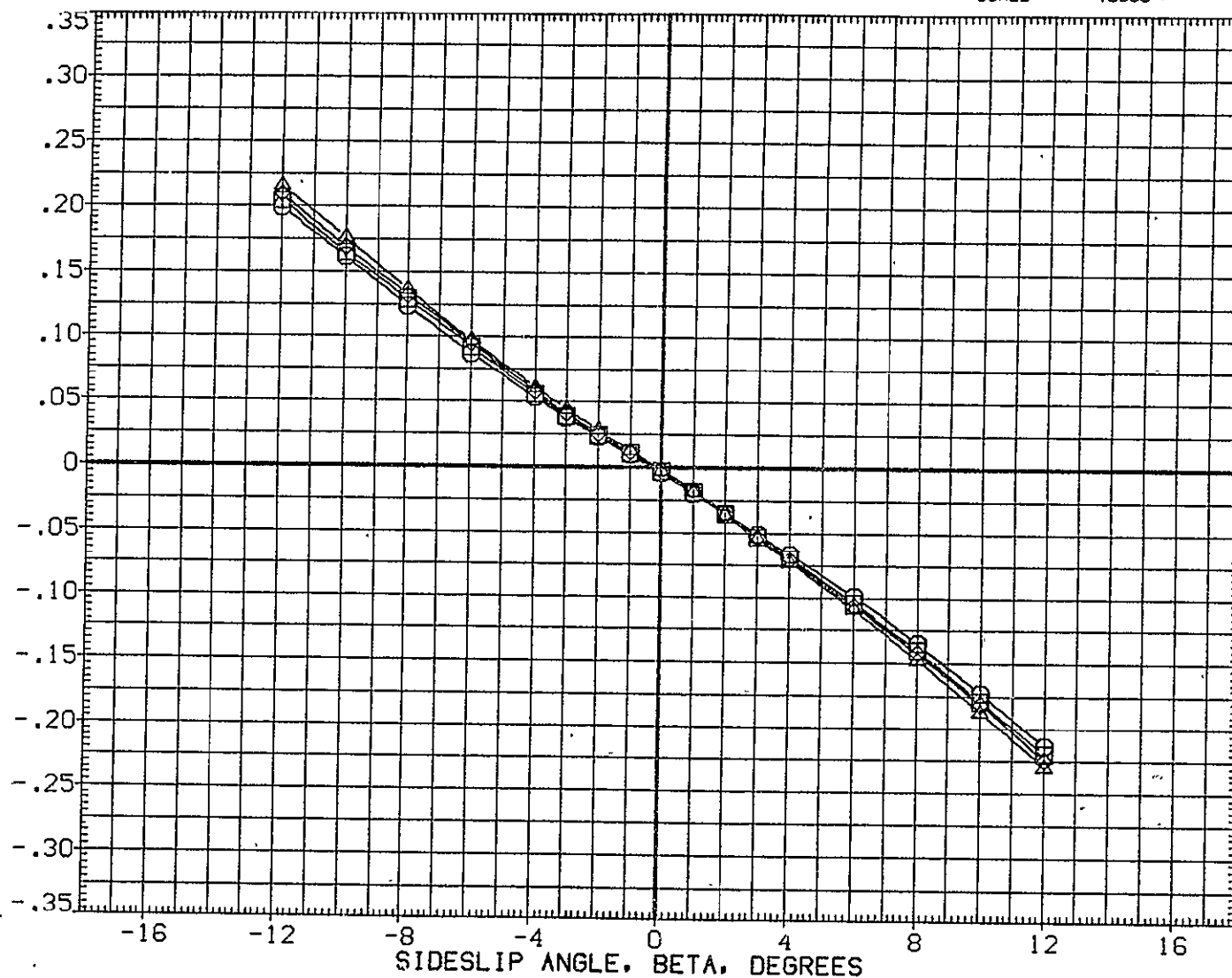


FIG.142 747+0RB(8 DEG)+TIP FINS+STD SPD BRK,FLAPS UP LAUNCH,ALPHA1=6,TC OFF 747

SYMBOL	MACH	PARAMETRIC VALUES				REFERENCE INFORMATION		
○	.300	ALPHA1	6.000	STAB	1.000	SREF	5500.0000	SQ.FT.
□	.500	RUD-U	.000	RUD-L	.000	LREF	327.8000	IN.
◇	.600	ELV-IB	.000	ELV-OB	3.000	BREF	2348.0000	IN.
△	.700	S1-2	.000	S3-4	45.000	XMRP	1339.9100	IN. XC
		S5-6	20.000	IORB	7.850	YMRP	.0000	IN. YC
						ZMRP	190.7500	IN. ZC
						SCALE	.0300	

INCREMENTAL YAWING MOMENT COEFFICIENT(STABILITY AXIS), DCLN

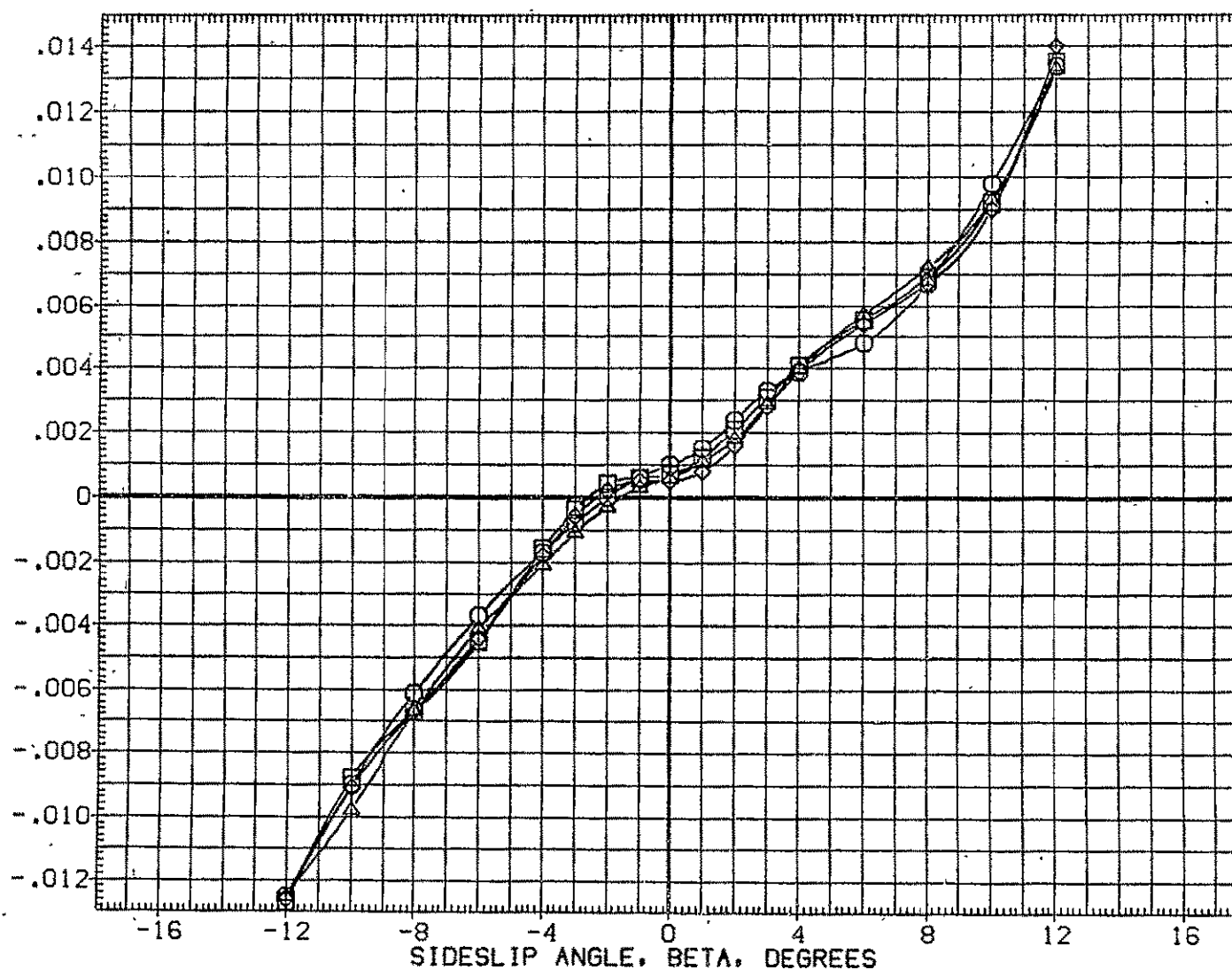


FIG.142 747+ORB(8 DEG)+TIP FINS+STD SPD BRK, FLAPS UP LAUNCH, ALPHA1=6, TC OFF 747

CA5 K1 FO H15.6 V9.1 MINUS ORB NOZ AT38.2 (BGM093)

SYMBOL	MACH	PARAMETRIC VALUES	REFERENCE INFORMATION
○	.300	ALPHA1 6.000 STAB 1.000	SREF 5500.0000 SQ.FT.
□	.500	RUD-U .000 RUD-L .000	LREF 327.8000 IN.
◇	.600	ELV-1B .000 ELV-OB 3.000	BREF 2348.0000 IN.
△	.700	S1-2 .000 S3-4 45.000	XMRP 1339.9100 IN. XC
		S5-6 20.000 ICRB 7.850	YMRP .0000 IN. YC
			ZMRP 190.7500 IN. ZC
			SCALE .0300

INCREMENTAL ROLLING MOMENT COEFFICIENT(STABILITY AXIS), DCSL

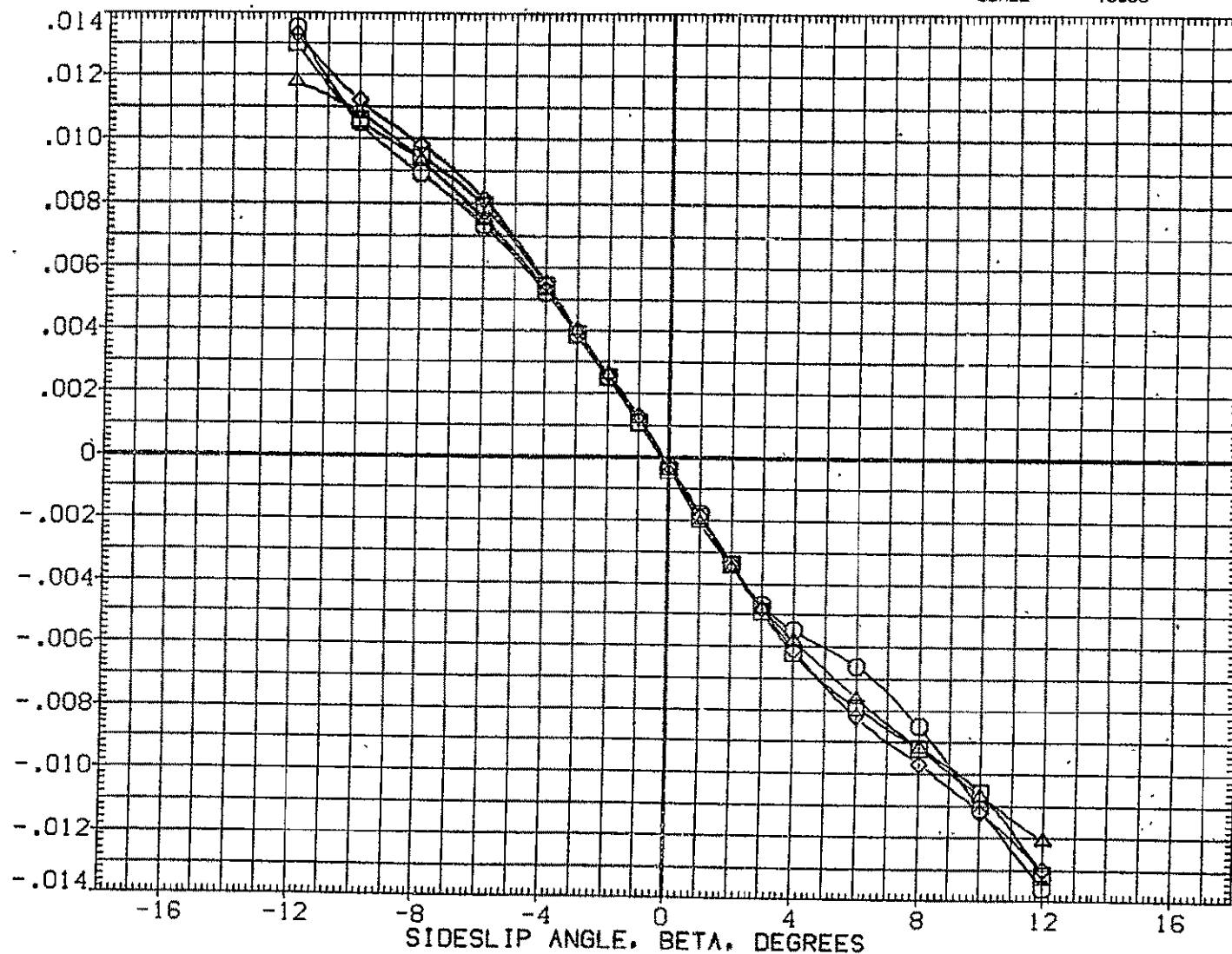


FIG.142 747+ORB(8 DEG)+TIP FINS+STD SPD BRK,FLAPS UP LAUNCH,ALPHA1=6,TC OFF 747

SYMBOL	MACH	PARAMETRIC VALUES	REFERENCE INFORMATION
○	.300	ALPHA1 6.000 STAB 1.000	SREF 2690.0000 SQ.FT.
□	.499	RUD-U .000 RUD-L .000	LREF 474.8100 IN.
◇	.600	ELV-1B .000 ELV-0B 3.000	BREF 936.6800 IN.
△	.700	S1-2 .000 S3-4 .45.000	XMRP 1109.0000 IN. X0
		S5-6 20.000 10RB 7.850	YMRP .0000 IN. Y0
			ZMRP 375.0000 IN. Z0
			SCALE .0300

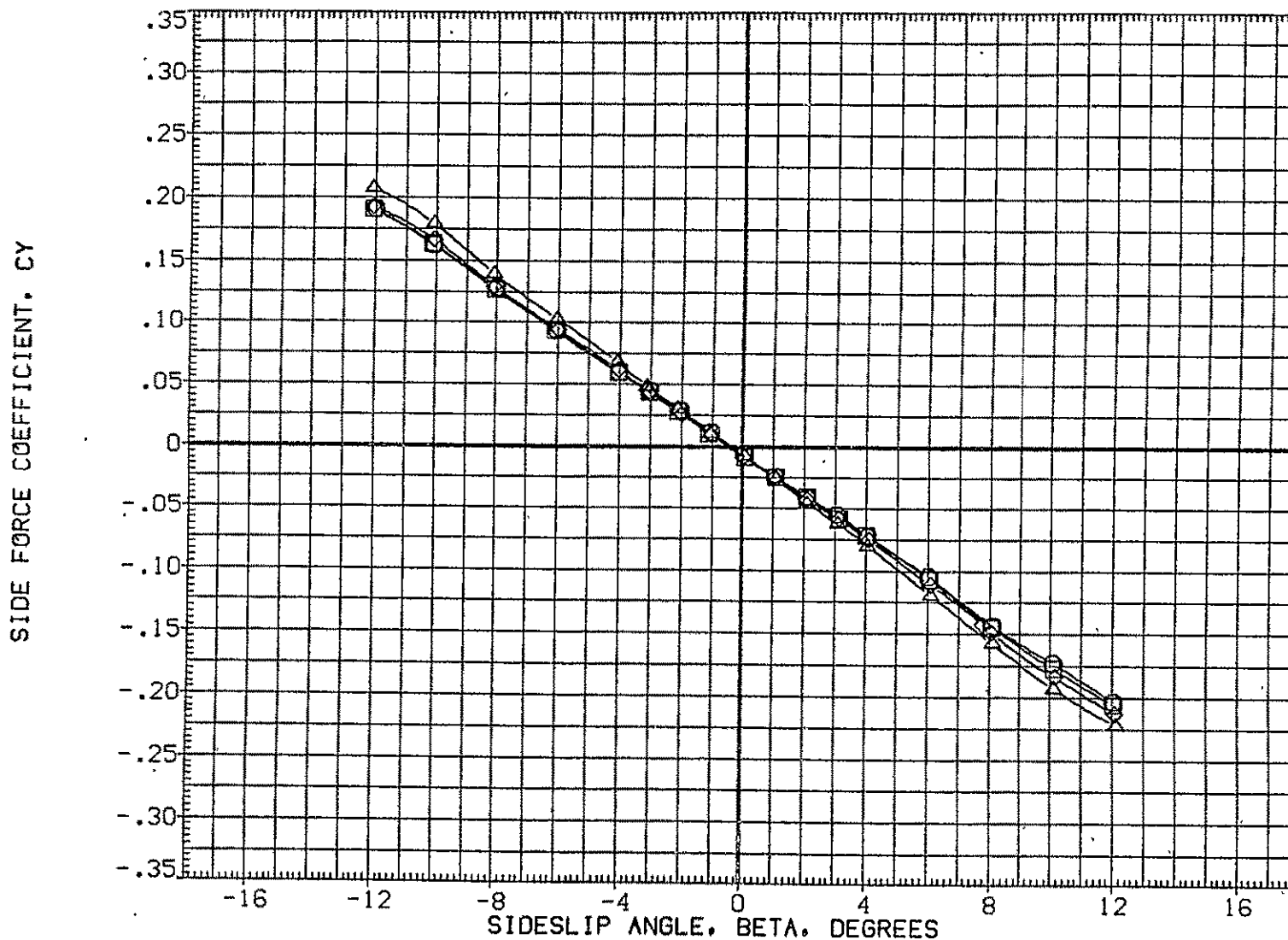


FIG.143 747+0RB(8 DEG)+TIP FINS+STD SPD BRK, FLAPS UP LAUNCH, ALPHA1=6, TC OFF 0RB

CA5 ORB NOZ AT38.2 (PRES. K1 FO H15.6 V9.1)(XGM093)

SYMBOL	MACH	PARAMETRIC VALUES	REFERENCE INFORMATION
○	.300	ALPHA1 6.000 STAB 1.000	SREF 2690.0000 SQ.FT.
□	.499	RUD-U .000 RUD-L .000	LREF 474.8100 IN.
◇	.600	ELV-1B .000 ELV-0B 3.000	BREF 936.6800 IN.
△	.700	S1-2 .000 S3-4 45.000	XMRP 1109.0000 IN. X0
		S5-6 20.000 10RB 7.850	YMRP .0000 IN. Y0
			ZMRP 375.0000 IN. Z0
			SCALE .0300

YAWING MOMENT COEFFICIENT, CLN. (STABILITY AXIS)

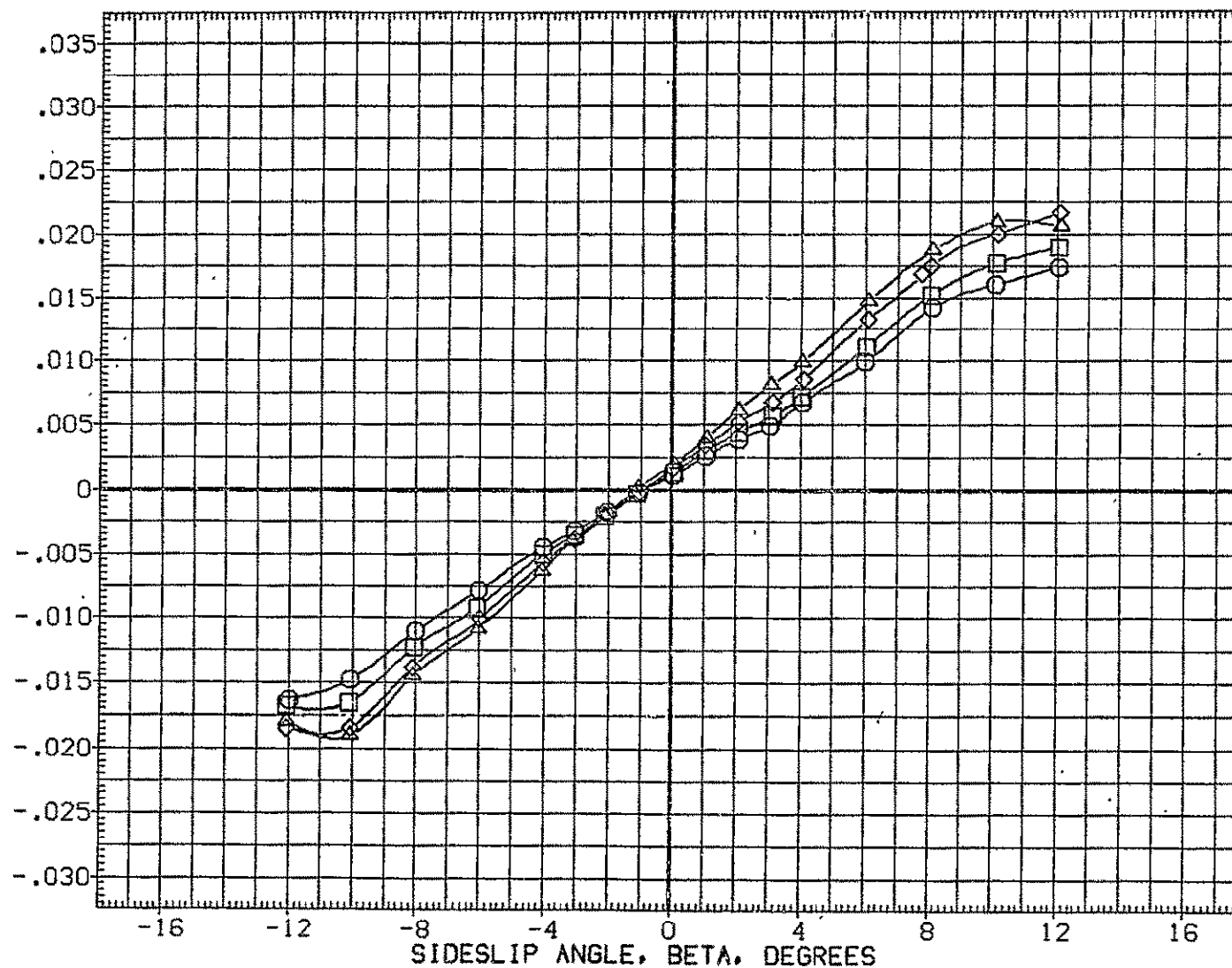


FIG.143 747+ORB(8 DEG)+TIP FINS+STD SPD BRK,FLAPS UP LAUNCH,ALPHA1=6,TC OFF ORB

SYMBOL	MACH	PARAMETRIC VALUES
○	.300	ALPHA1 6.000 STAB 1.000
□	.499	RUD-U .000 RUD-L .000
◇	.600	ELV-1B .000 ELV-0B 3.000
△	.700	S1-2 .000 S3-4 45.000
		SS-6 20.000 10RB 7.850

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN. X0
YMRP	.0000	IN. Y0
ZMRP	375.0000	IN. Z0
SCALE	.0300	

ROLLING MOMENT COEFFICIENT, CSL, (STABILITY AXIS)

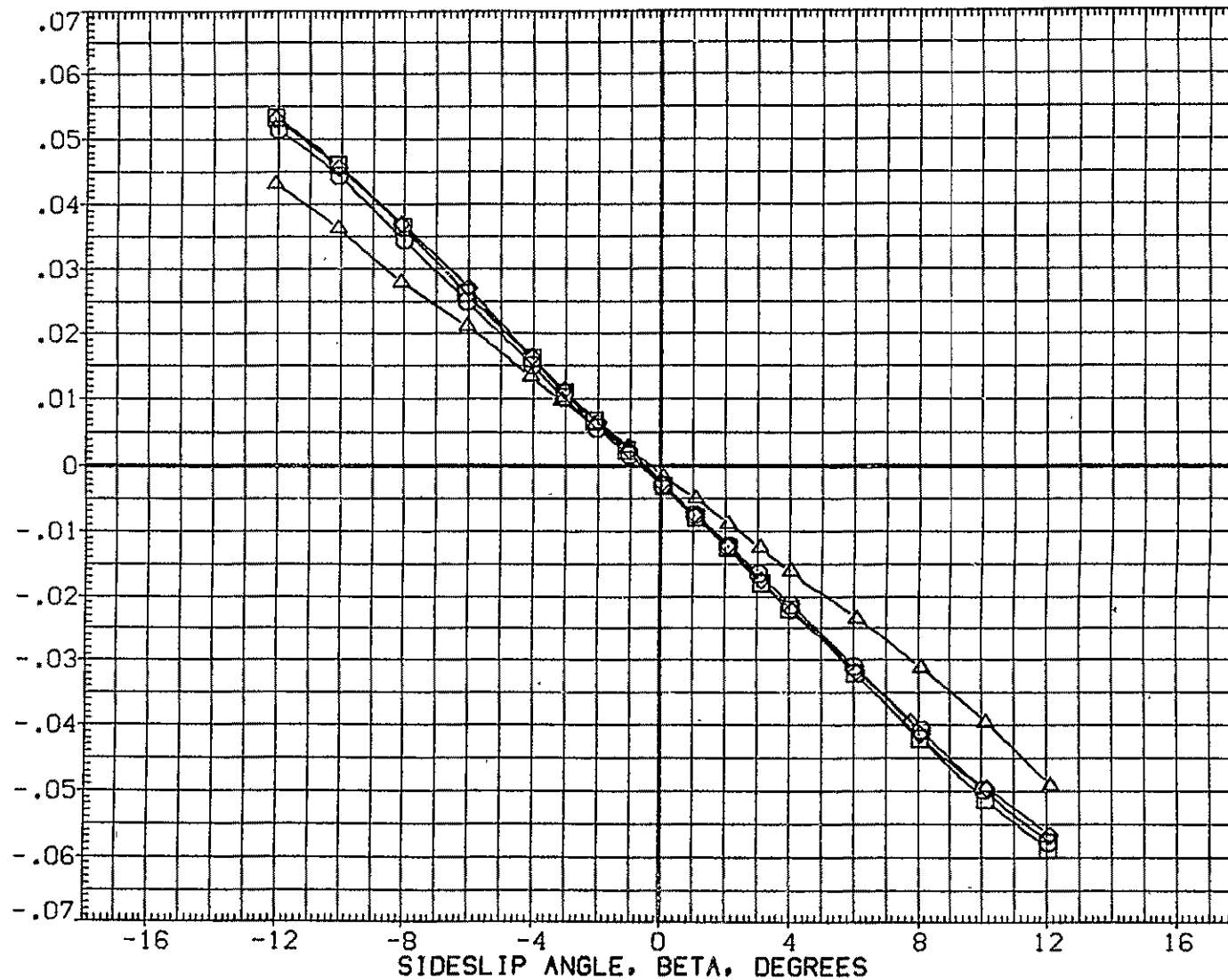


FIG.143 747+0RB(8 DEG)+TIP FINS+STD SPD BRK, FLAPS UP LAUNCH, ALPHA1=6, TC OFF 0RB

CAS K1 F0 H15.6 V9.1 (PLUS. ORB NOZ AT38.2)(RGM094)

SYMBOL	MACH	PARAMETRIC VALUES				REFERENCE INFORMATION		
○	.300	ALPHA1	6.000	STAB	1.000	SREF	5500.0000	SQ.FT.
□	.500	RUD-U	10.000	RUD-L	10.000	LREF	327.8000	IN.
◇	.600	ELV-1B	.000	ELV-0B	3.000	BREF	2348.0000	IN.
△	.700	S1-2	.000	S3-4	45.000	XMRP	1339.9100	IN. XC
		S5-6	20.000	ICRB	7.850	YMRP	.0000	IN. YC
						ZMRP	190.7500	IN. ZC
						SCALE	.0300	

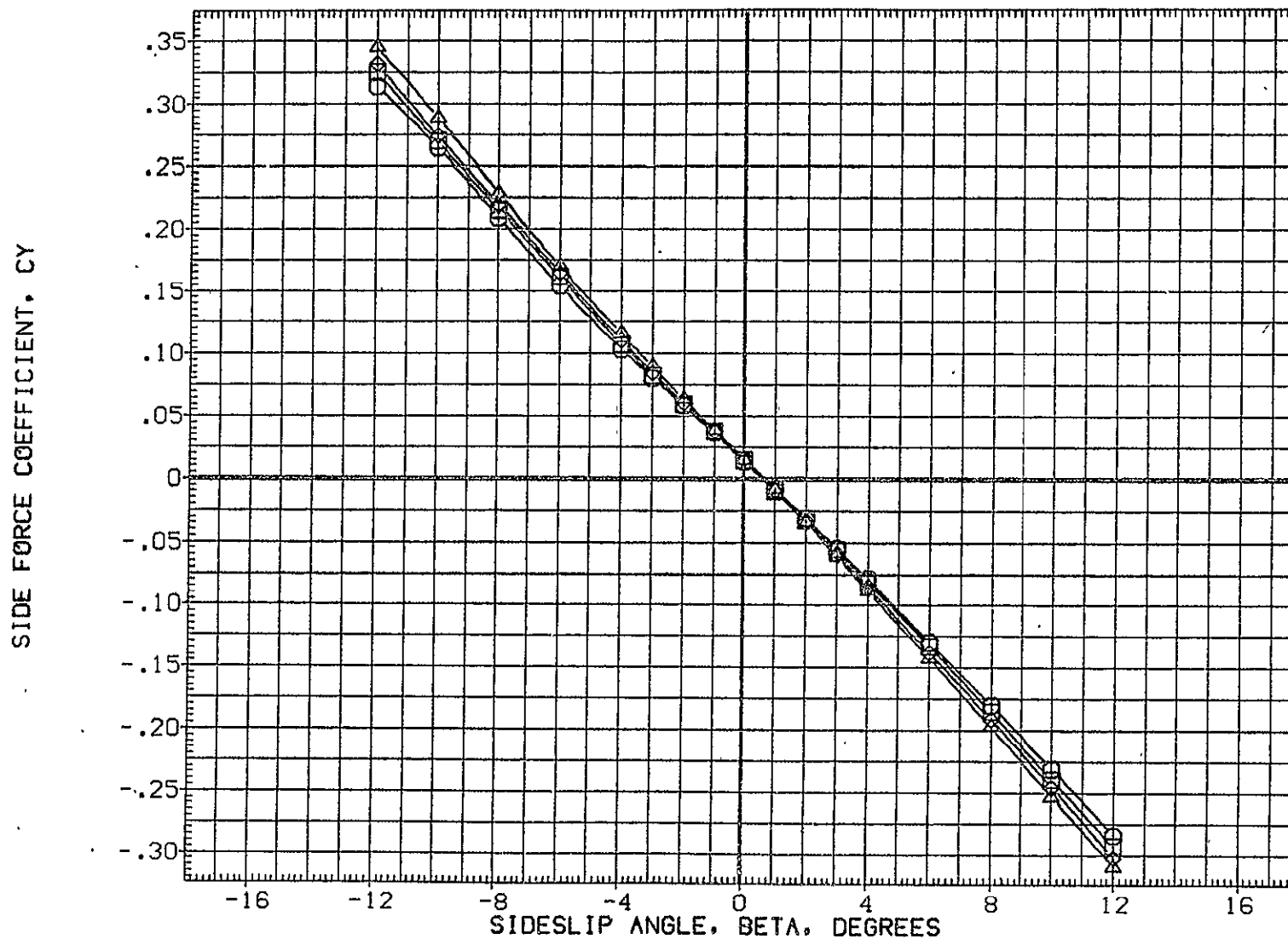


FIG.144 747+ORB(8 DEG)+TIP FINS+STD SPD BRK,FLAPUP LNCH,ALP=6,TC OFF,R=10/10 TOT

SYMBOL	MACH	PARAMETRIC VALUES	REFERENCE INFORMATION
○	.300	ALPHA 6.000 STAB 1.000	SREF 5500.0000 SQ.FT.
□	.500	RUD-U 10.000 RUD-L 10.000	LREF 327.8000 IN.
◇	.600	ELV-1B .000 ELV-OB 3.000	BREF 2348.0000 IN.
△	.700	S1-2 .000 S3-4 45.000	XMRP 1339.9100 IN. XC
		S5-6 20.000 10RB 7.850	YMRP .0000 IN. YC
			ZMRP 190.7500 IN. ZC
			SCALE .0300

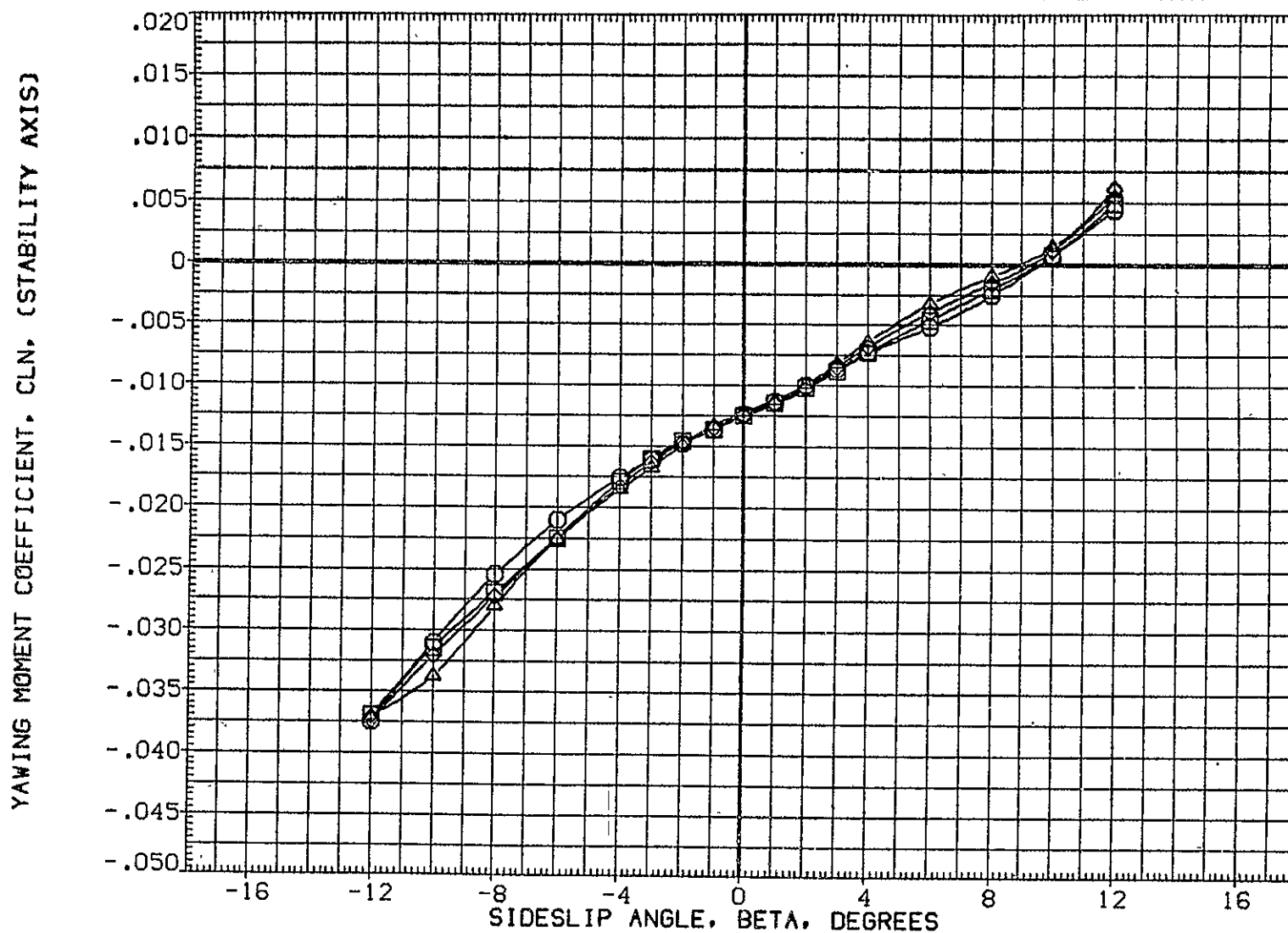


FIG.144 747+ORB(8 DEG)+TIP FINS+STD SPD BRK,FLAPUP LNCH,ALP=6,TC OFF,R=10/10 TOT

CA5 K1 FO H15.6 V9.1 (PLUS. 0RB NOZ AT38.2)(RGM094)

SYMBOL
○
□
◇
△

MACH	PARAMETRIC VALUES			
.300	ALPHA1	6.000	STAB	1.000
.500	RUD-U	10.000	RUD-L	10.000
.600	ELV-1B	.000	ELV-0B	3.000
.700	S1-2	.000	S3-4	45.000
	S5-6	20.000	IORB	7.850

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

ROLLING MOMENT COEFFICIENT, CSL. (STABILITY AXIS)

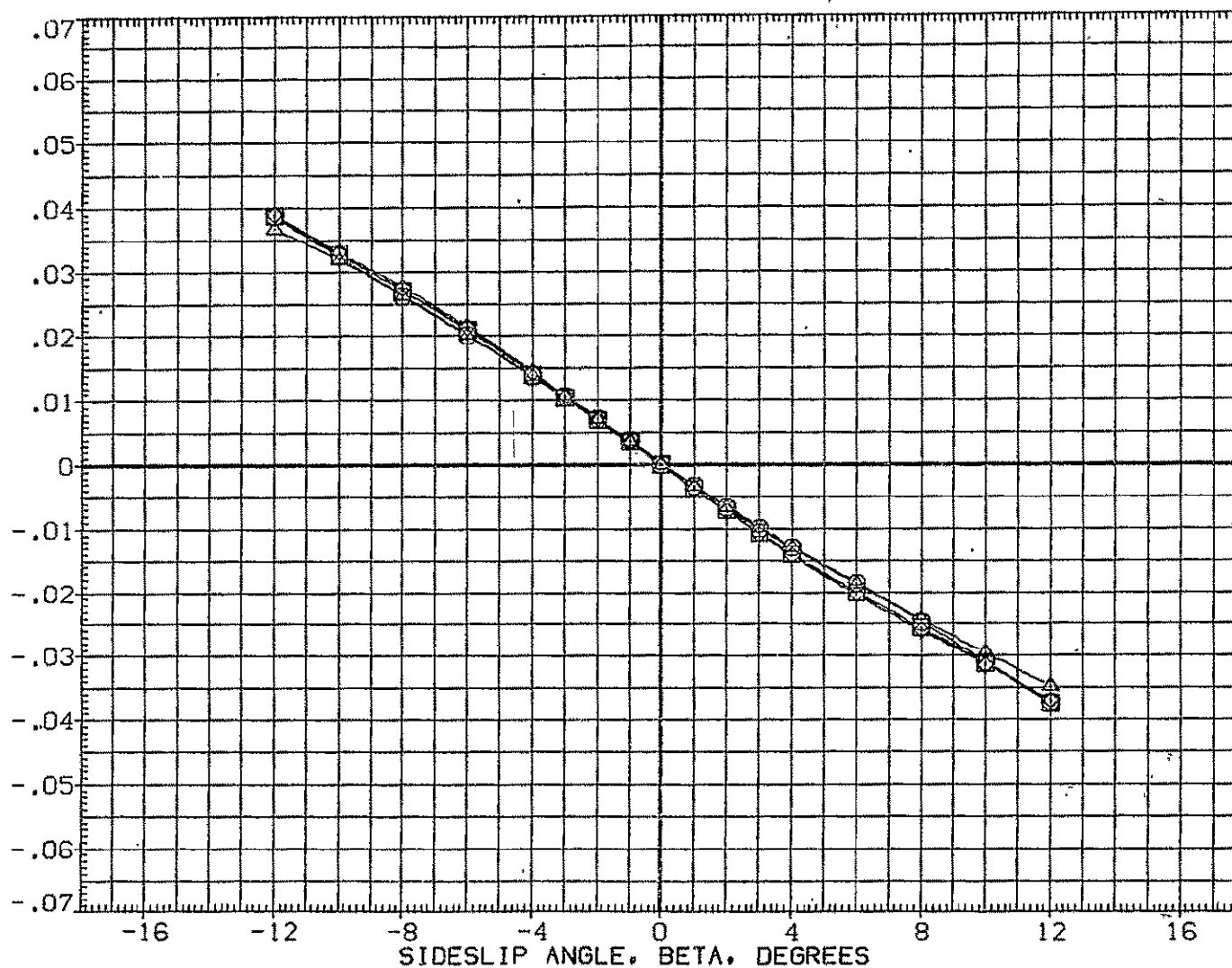


FIG.144 747+0RB(8 DEG)+TIP FINS+STD SPD BRK,FLAPUP LNCH,ALP=6,TC OFF,R=10/10 TOT

SYMBOL

○
□
◇
△

MACH

.300
.500
.600
.700ALPHA1
RUD-U
ELV-18
S1-2
S5-6

PARAMETRIC VALUES

6.000 STAB 1.000
10.000 RUD-L 10.000
.000 ELV-08 .3.000
.000 S3-4 45.000
20.000 IORB 7.850

REFERENCE INFORMATION

SREF 5500.0000 SQ.FT.
LREF 327.8000 IN.
BREF 2348.0000 IN.
XMRP 1339.9100 IN. XC
YMRP .0000 IN. YC
ZMRP 190.7500 IN. ZC
SCALE .0300

INCREMENTAL SIDE FORCE COEFFICIENT(STABILITY AXIS), DCY

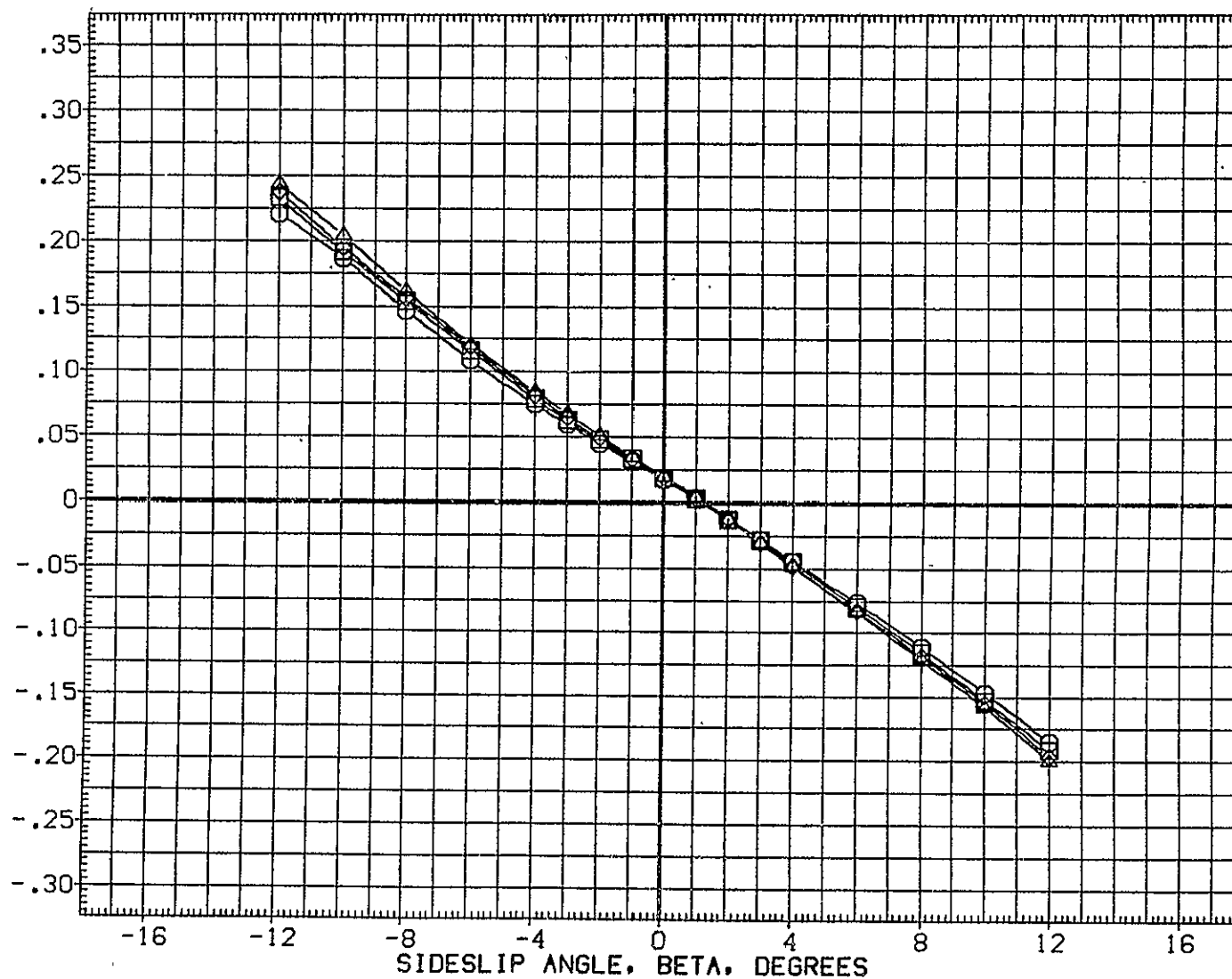


FIG.145 747+ORB(8 DEG)+TIP FINS+STD SPD BRK,FLAPUP LNCH,ALP=6,TC OFF,R=10/10 747

CA5 K1 FO H15.6 V9.1 MINUS ORB NOZ AT38.2 (BGM094)

SYMBOL	MACH	PARAMETRIC VALUES
○	.300	ALPHA1 6.000 STAB 1.000
□	.500	RUD-U 10.000 RUD-L 10.000
◇	.600	ELV-1B .000 ELV-0B 3.000
△	.700	S1-2 .000 S3-4 45.000
		S5-6 20.000 10RB 7.850

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

INCREMENTAL YAWING MOMENT COEFFICIENT(STABILITY AXIS), DCLN.

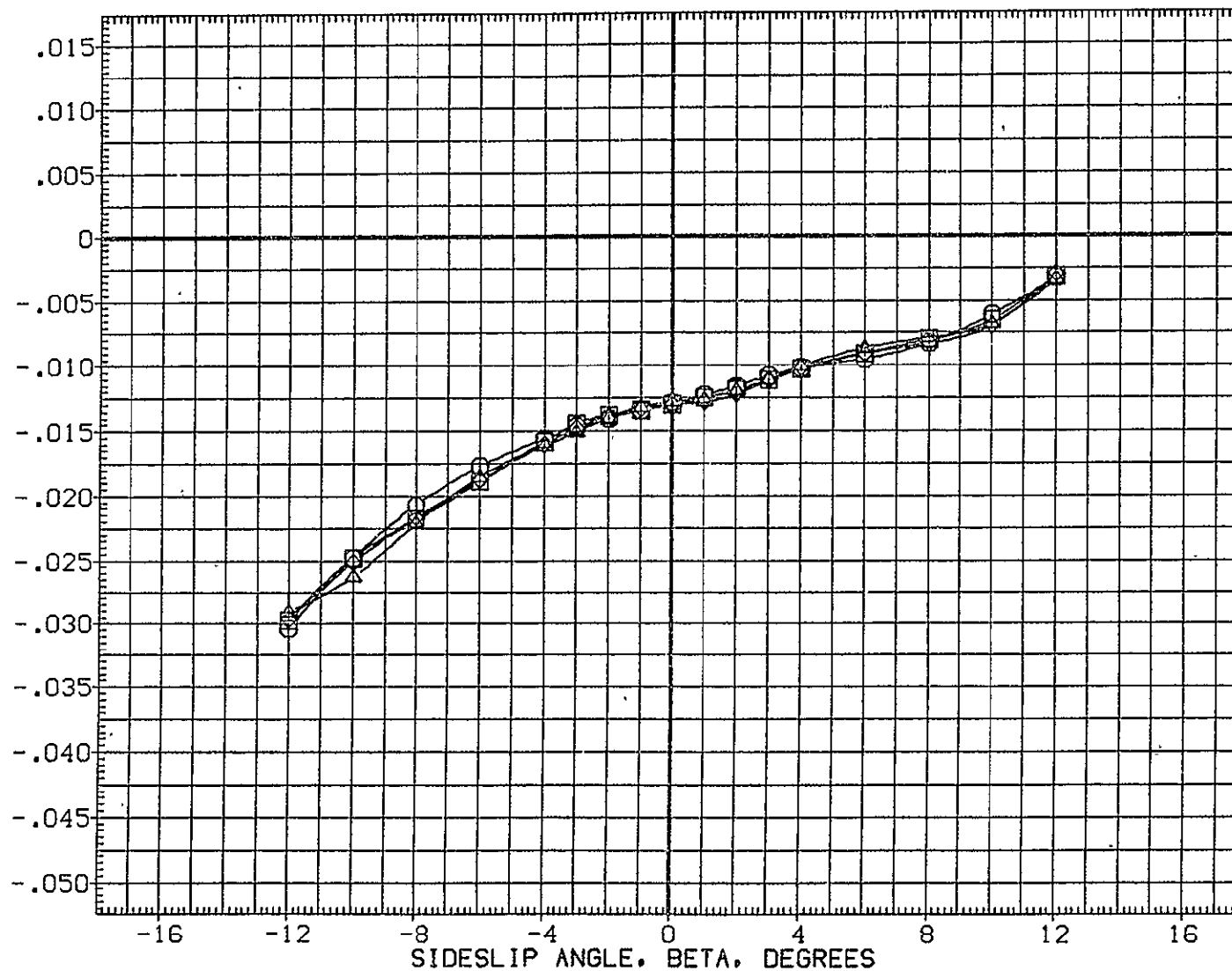


FIG.145 747+ORB(8 DEG)+TIP FINS+STD SPD BRK,FLAPUP LNCH,ALP=6,TC OFF,R=10/10 747

SYMBOL	MACH	PARAMETRIC VALUES
○	.300	ALPHA I 6.000 STAB 1.000
□	.500	RUD-U 10.000 RUD-L 10.000
◇	.600	ELV-1B .000 ELV-OB 3.000
△	.700	S1-2 .000 S3-4 45.000
		S5-6 20.000 10RB 7.850

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

INCREMENTAL ROLLING MOMENT COEFFICIENT (STABILITY AXIS), DC SL

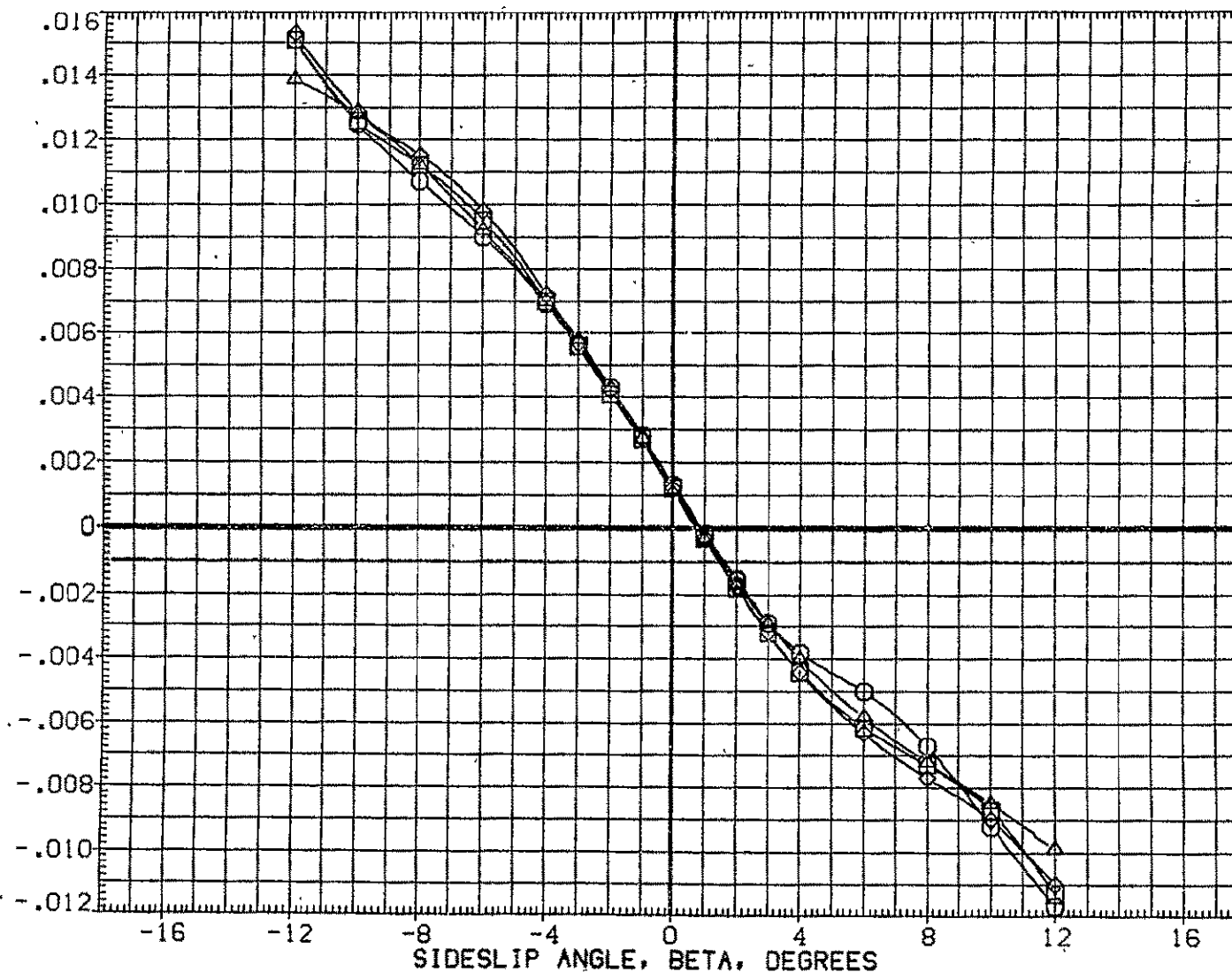


FIG.145 747+ORB(8 DEG)+TIP FINS+STD SPD BRK, FLAPUP LNCH, ALP=6, TC OFF, R=10/10 747

CA5 ORB NOZ AT38.2 (PRES. K1 FO H15.6 V9.1)(XGM094)

SYMBOL	MACH	PARAMETRIC VALUES	REFERENCE INFORMATION
○	.299	ALPHA1 6.000 STAB 1.000	SREF 2690.0000 SQ.FT.
□	.500	RUD-U 10.000 RUD-L 10.000	LREF 474.8100 IN.
◇	.601	ELV-IB .000 ELV-OB 3.000	BREF 936.6800 IN.
△	.700	S1-2 .000 S3-4 45.000	XMRP 1109.0000 IN. X0
		SS-6 20.000 TORB 7.850	YMRP .0000 IN. Y0
			ZMRP 375.0000 IN. Z0
			SCALE .0300

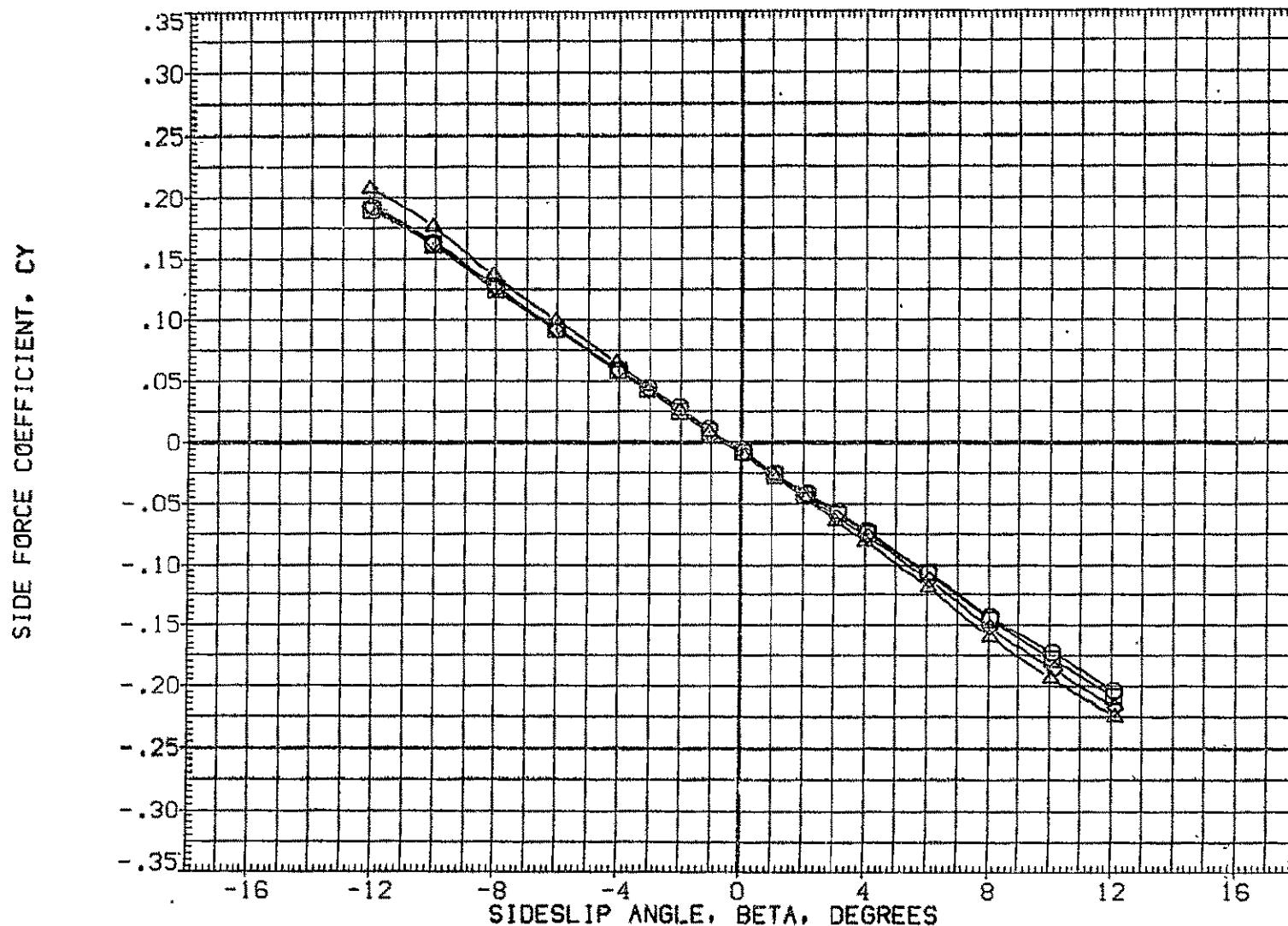


FIG.146 747+ORB(8 DEG)+TIP FINS+STD SPD BRK, FLAPUP LNCH, ALP=6, TC OFF, R=10/10 ORB

SYMBOL	MACH	PARAMETRIC VALUES
○	.299	ALPHA 6.000 STAB 1.000
□	.500	RUD-U 10.000 RUD-L 10.000
◇	.601	ELV-1B .000 ELV-0B 3.000
△	.700	S1-2 .000 S3-4 45.000
		SS-6 20.000 10RB 7.850

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN. X0
YMRP	.0000	IN. Y0
ZMRP	375.0000	IN. Z0
SCALE	.0300	

YAWING MOMENT COEFFICIENT, CLN, (STABILITY AXIS)

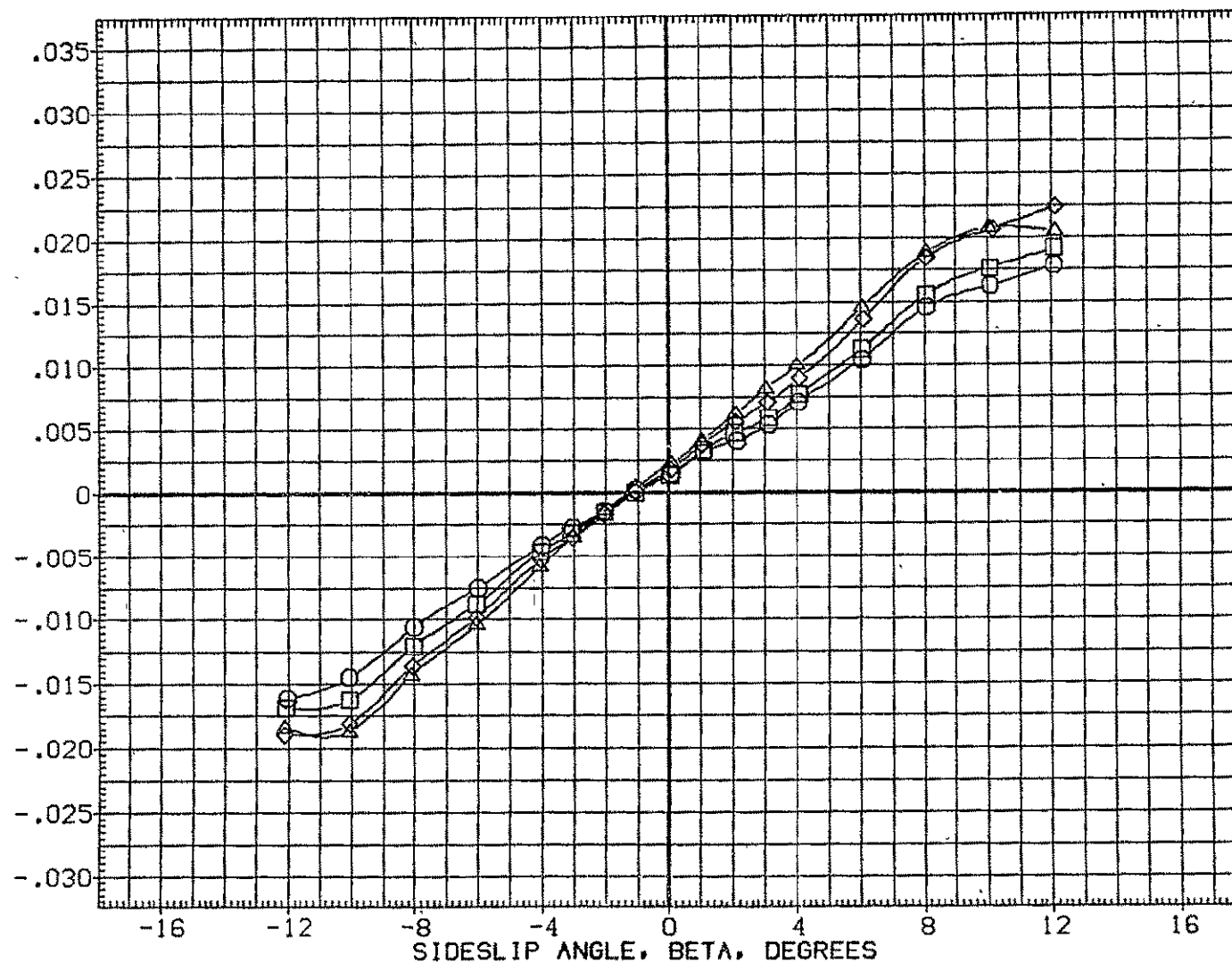


FIG.146 747+ORB(8 DEG)+TIP FINS+STD SPD BRK,FLAPUP LNCH,ALP=6,TC OFF,R=10/10 ORB

CA5 ORB NOZ AT38.2 (PRES. K1 FO H15.6 V9.1)(XGM094)

SYMBOL	MACH	PARAMETRIC VALUES	REFERENCE INFORMATION
△	.299	ALPHA1 6.000 STAB 1.000	SREF 2690.0000 SQ.FT.
□	.500	RUD-U 10.000 RUD-L 10.000	LREF 474.8100 IN.
◇	.601	ELV-1B .000 ELV-OB 3.000	BREF 936.6800 IN.
○	.700	S1-2 .000 S3-4 45.000	XMRP 1109.0000 IN. X0
		S5-6 20.000 TORB 7.850	YMRP .0000 IN. Y0
			ZMRP 375.0000 IN. Z0
			SCALE .0300

ROLLING MOMENT COEFFICIENT, CSL, (STABILITY AXIS)

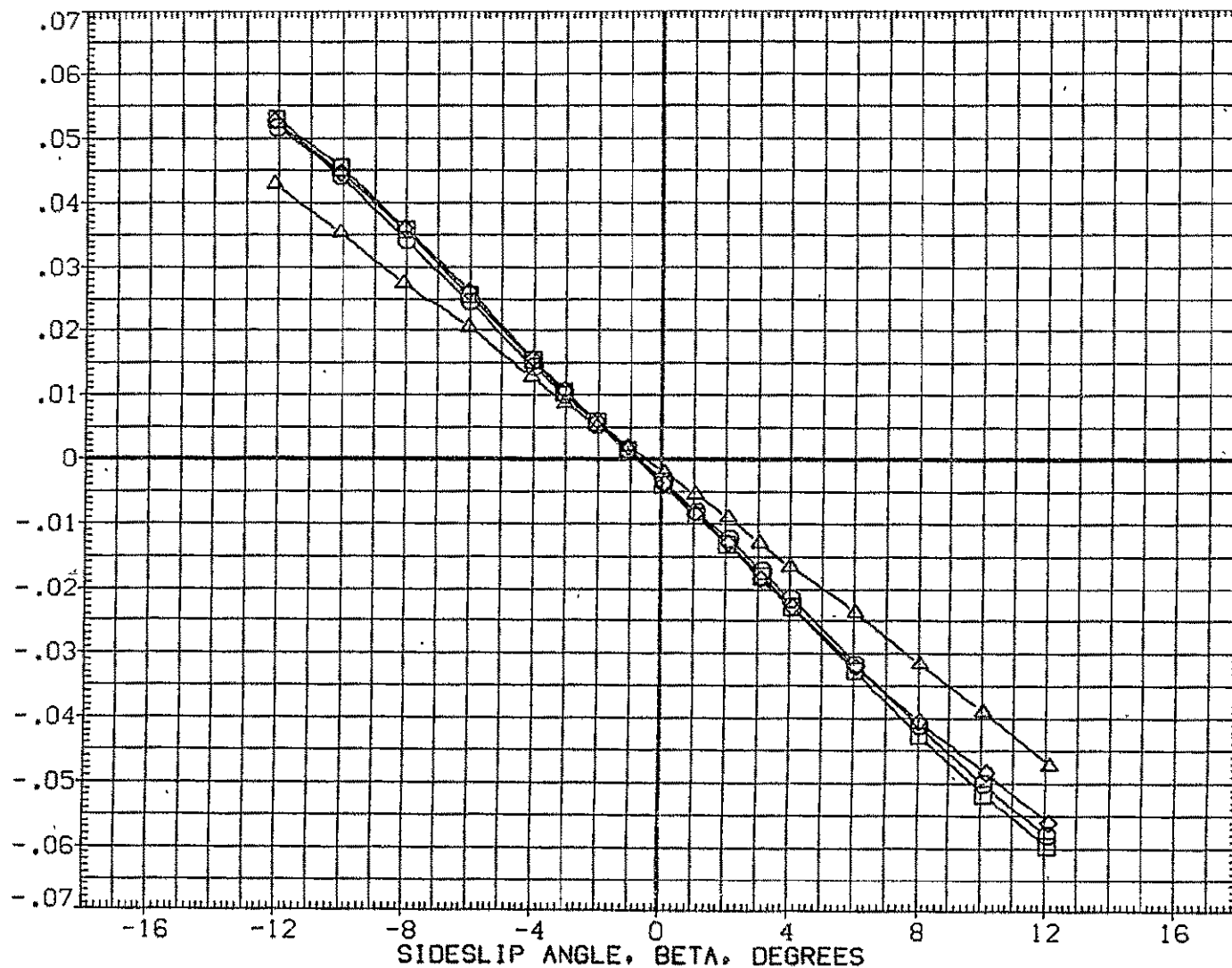


FIG.146 747+ORB(8 DEG)+TIP FINS+STD SPD BRK, FLAPUP LNCH, ALP=6, TC OFF, R=10/10 ORB

SYMBOL	MACH	PARAMETRIC VALUES	REFERENCE INFORMATION
○	.300	ALPHA1 6.000 STAB 1.000	SREF 5500.0000 SQ.FT.
□	.500	RUD-U .000 RUD-L .000	LREF 327.8000 IN.
◇	.600	ELV-IB .000 ELV-OB .000	BREF 2348.0000 IN.
△	.700	S1-2 .000 S3-4 45.000	XMRP 1339.9100 IN. XC
		S5-6 20.000 ORB 9.700	YMRP .0000 IN. YC
			ZMRP 190.7500 IN. ZC
			SCALE .0300

SIDE FORCE COEFFICIENT, CY

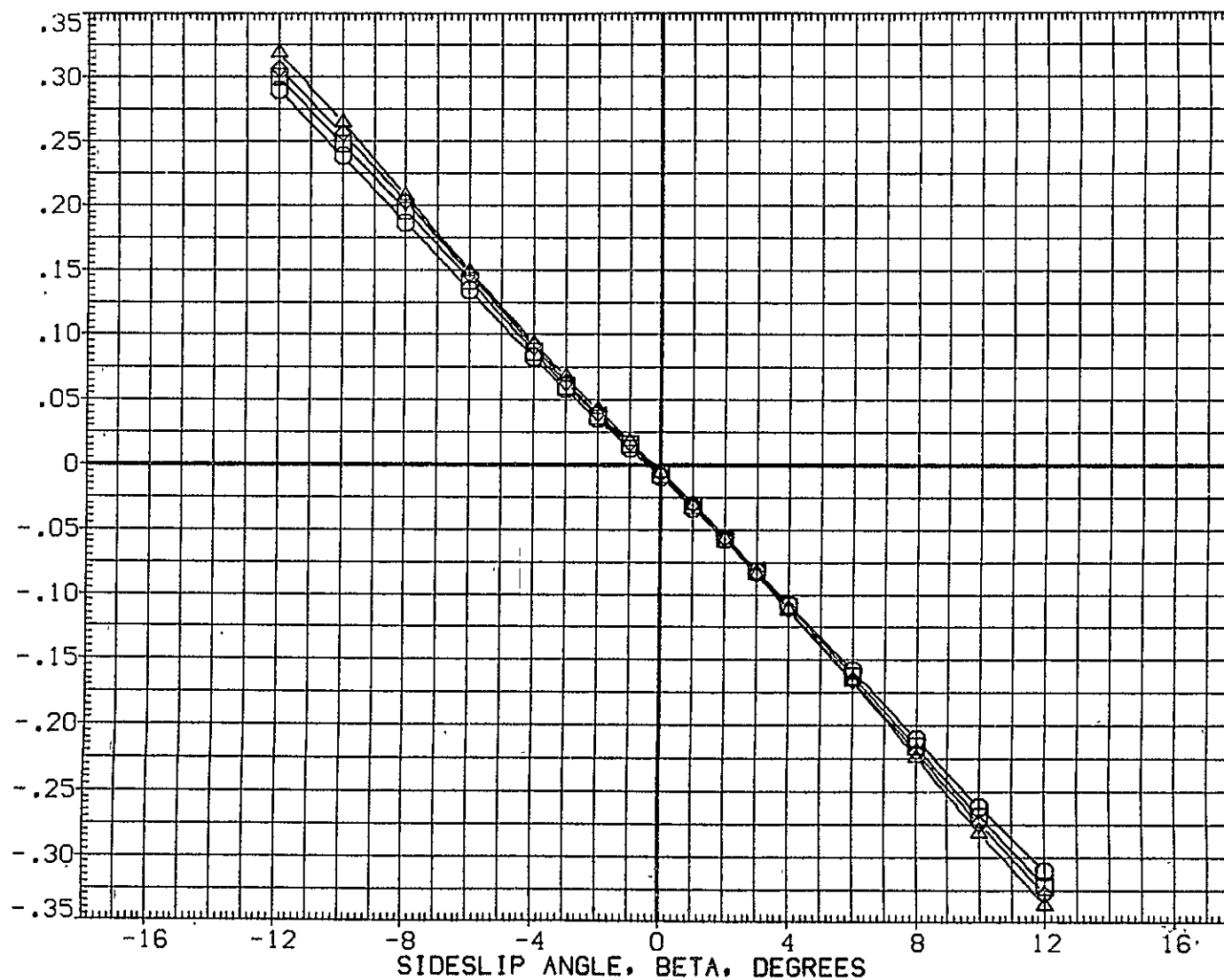


FIG.147 747+ORB(10 DEG)+TIP FINS+STD SPD BRK,FLAPS UP LAUNCH,ALPHA1= 6 DEG TOTAL

CAS K1 FO H15.6 V9.1 (PLUS. ORB TC5 AT38.2)(RGM097)

SYMBOL	MACH	PARAMETRIC VALUES				REFERENCE INFORMATION		
○	.300	ALPHA1	6.000	STAB	1.000	SREF	5500.0000	SQ.FT.
□	.500	RUD-U	.000	RUD-L	.000	LREF	327.8000	IN.
◇	.600	CLV-1B	.000	ELV-0B	.000	BREF	2348.0000	IN.
△	.700	S1-2	.000	S3-4	45.000	XMRP	1339.9100	IN. XC
		S5-6	20.000	ICRB	9.700	YMRP	.0000	IN. YC
						ZMRP	190.7500	IN. ZC
						SCALE	.0300	

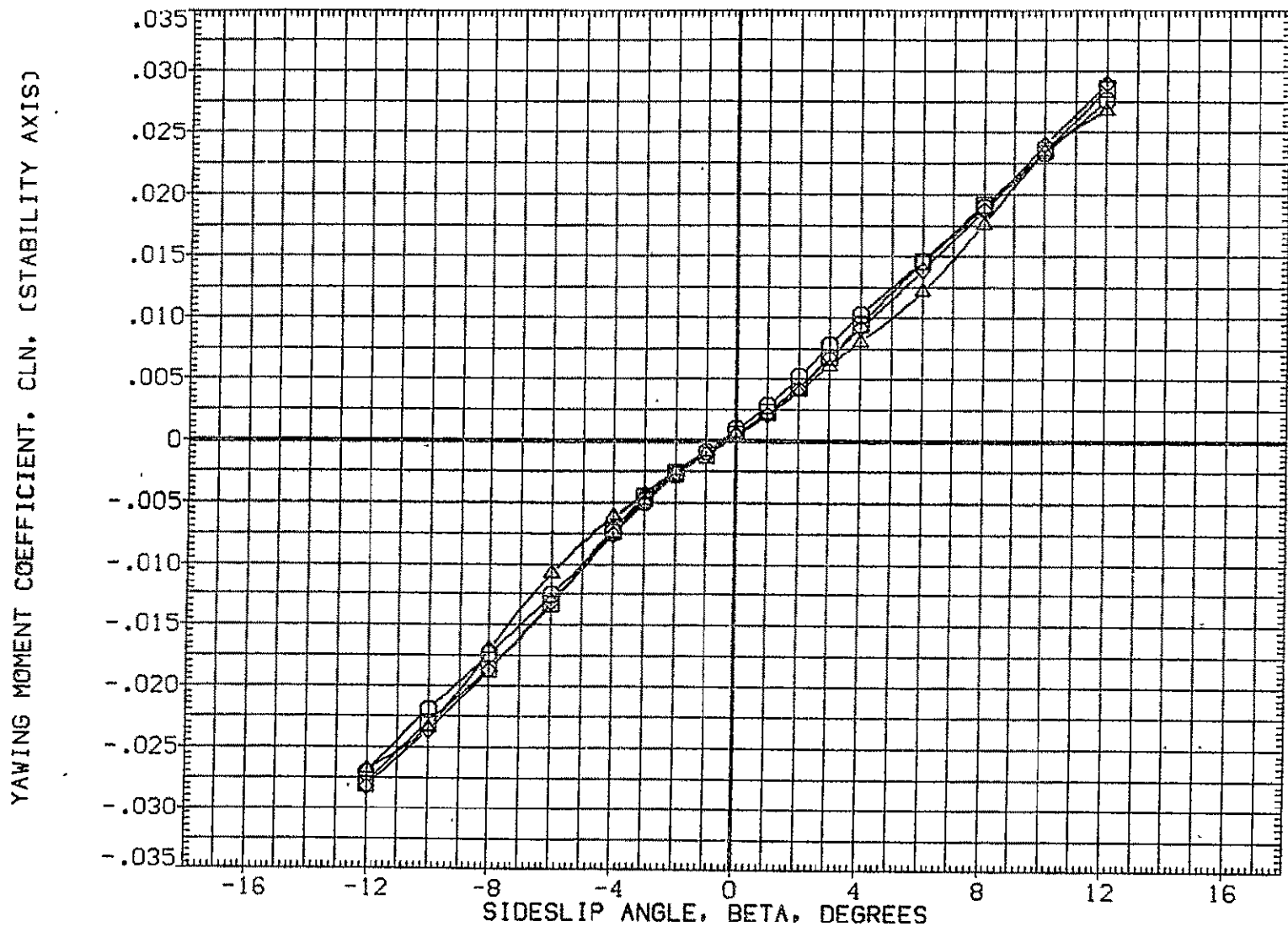


FIG.147 747+ORB(10 DEG)+TIP FINS+STD SPD BRK,FLAPS UP LAUNCH,ALPHA1= 6 DEG TOTAL

SYMBOL	MACH	PARAMETRIC VALUES	REFERENCE INFORMATION
○	.300	ALPHA I 6.000 STAB 1.000	SREF 5500.0000 SQ.FT.
□	.500	RUD-U .000 RUD-L .000	LREF 327.8000 IN.
◇	.600	ELV-IB .000 ELV-OB .000	BREF 2348.0000 IN.
△	.700	S1-2 .000 S3-4 45.000	XMRP 1339.9100 IN. XC
		S5-6 20.000 10RB 9.700	YMRP .0000 IN. YC
			ZMRP 190.7500 IN. ZC
			SCALE .0300

ROLLING MOMENT COEFFICIENT, CSL. (STABILITY AXIS)

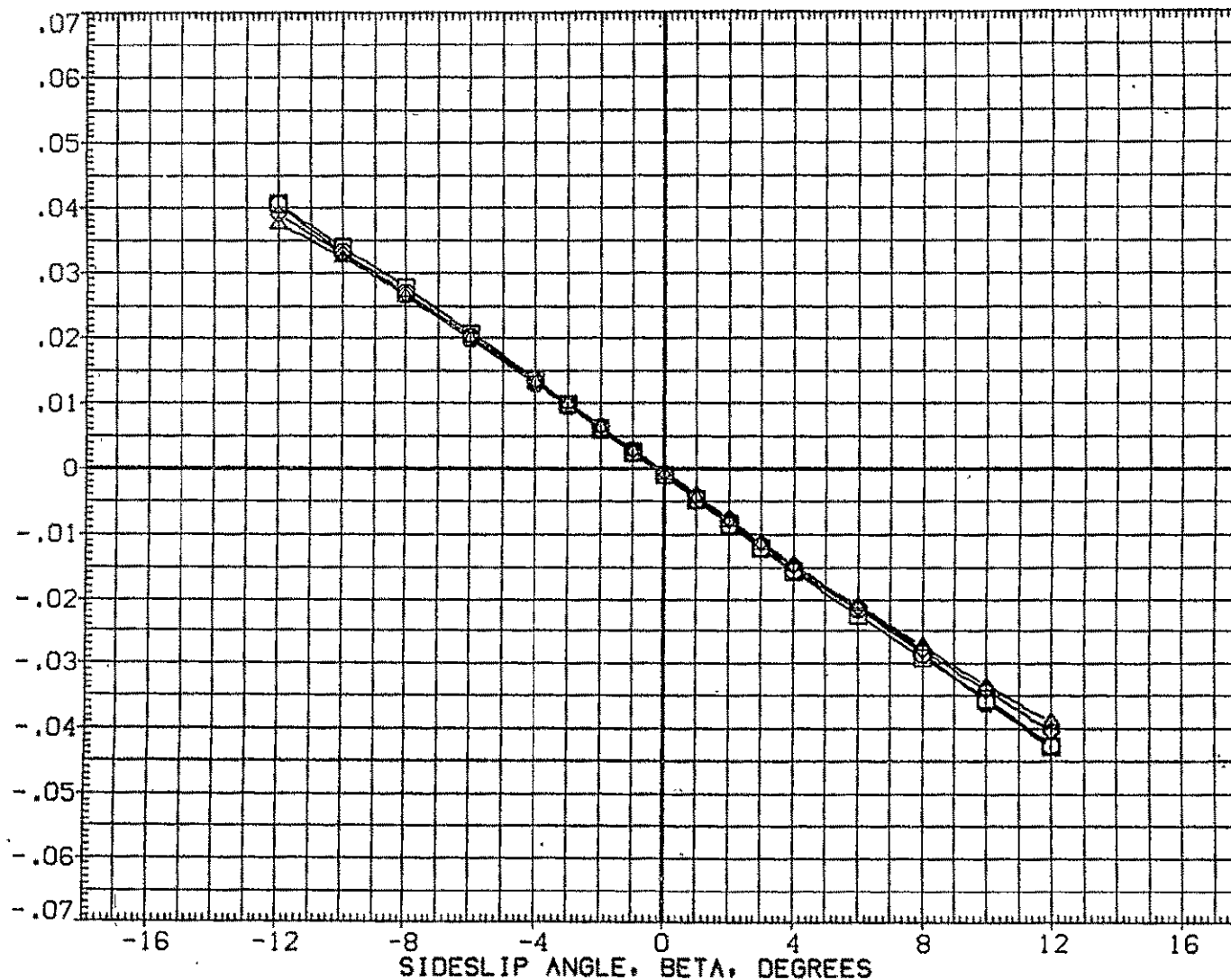


FIG.147 747+ORB(10 DEG)+TIP FINS+STD SPD BRK,FLAPS UP LAUNCH,ALPHA I= 6 DEG TOTAL

CA5 K1 F0 H15.6 V9.1 MINUS ORB TC5 AT38.2 (BGM097)

SYMBOL	MACH	PARAMETRIC VALUES	REFERENCE INFORMATION
○	.300	ALPHA1 6.000 STAB 1.000	SREF 5500.0000 SQ.FT.
□	.500	RUD-U .000 RUD-L .000	LREF 327.8000 IN.
◇	.600	ELV-1B .000 ELV-OB .000	BREF 2348.0000 IN.
△	.700	S1-2 .000 S3-4 45.000	XMRP 1339.9100 IN. XC
		S5-6 20.000 10RB 9.700	YMRP .0000 IN. YC
			ZMRP 190.7500 IN. ZC
			SCALE .0300

INCREMENTAL SIDE FORCE COEFFICIENT(STABILITY AXIS), DCY

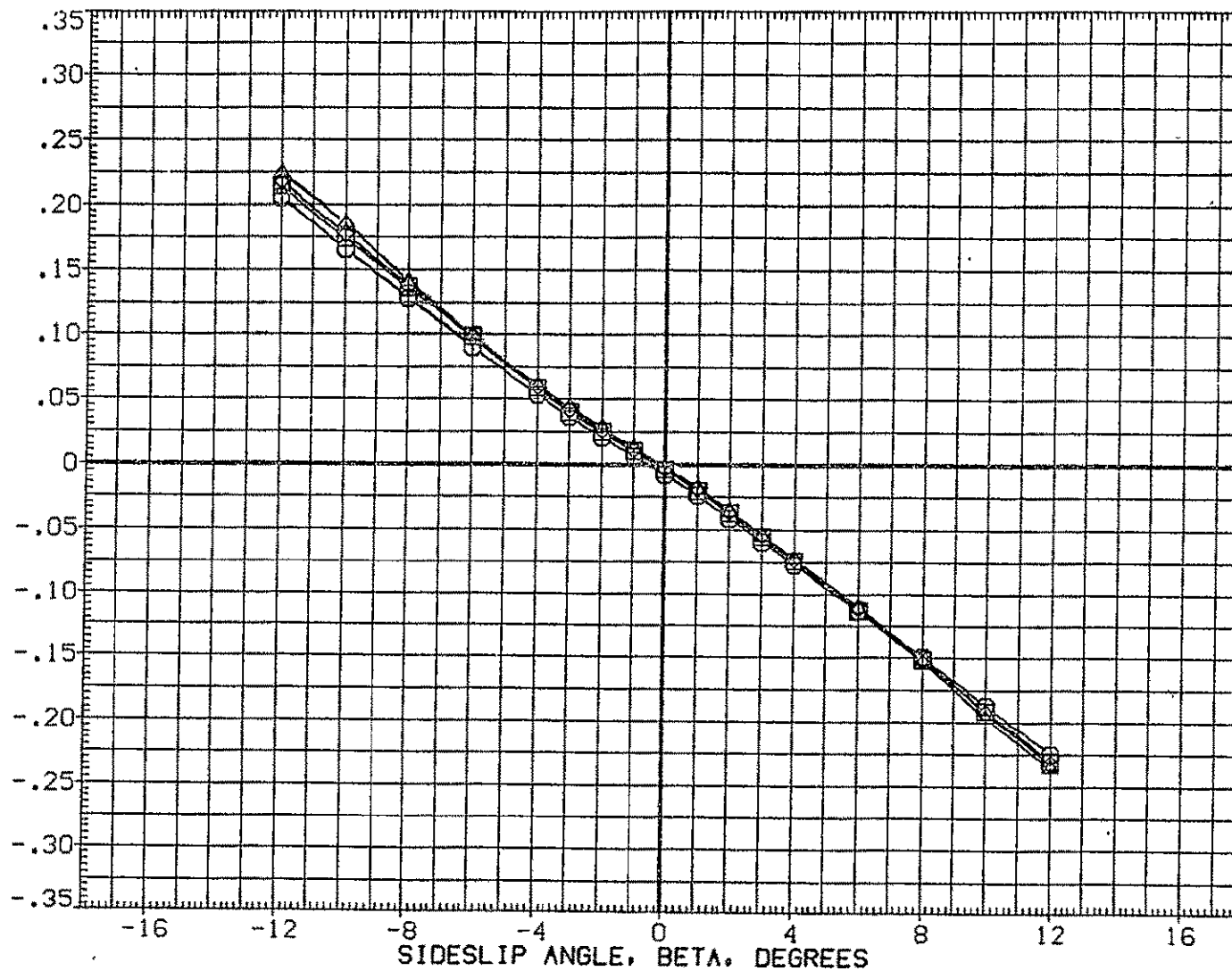


FIG.148 747+ORB(10 DEG)+TIP FINS+STD SPD BRK,FLAPS UP LAUNCH,ALPHA1= 6 DEG 747.

SYMBOL	MACH	PARAMETRIC VALUES
○	.300	ALPHA1 6.000 STAB 1.000
□	.500	RUD-U .000 RUD-L .000
◇	.600	ELV-1B .000 ELV-0B .000
△	.700	S1-2 .000 S3-4 45.000
		SS-6 20.000 IORB 9.700

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

INCREMENTAL YAWING MOMENT COEFFICIENT(STABILITY AXIS), DCLN

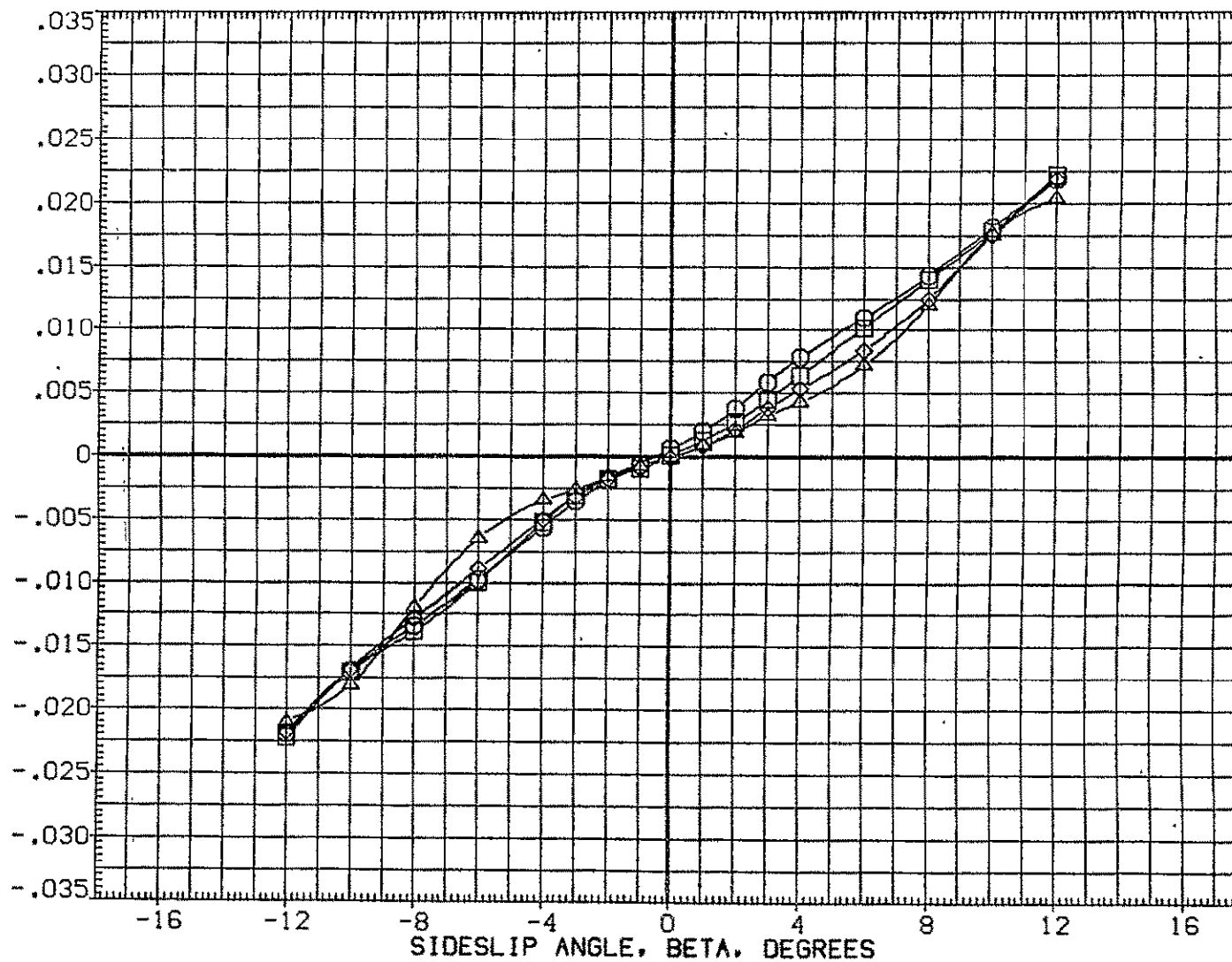


FIG.148 747+ORB(10 DEG)+TIP FINS+STD SPD BRK,FLAPS UP LAUNCH,ALPHA1= 6 DEG 747

CAS K1 F0 H15.6 V9.1 MINUS ORB TC5 AT38.2 (BGM097)

SYMBOL	MACH	PARAMETRIC VALUES				REFERENCE INFORMATION		
○	.300	ALPHA1	6.000	STAB	1.000	SREF	5500.0000	SQ.FT.
□	.500	RUD-U	.000	RUD-L	.000	LREF	327.8000	IN.
◇	.600	ELV-1B	.000	ELV-0B	.000	BREF	2348.0000	IN.
△	.700	S1-2	.000	S3-4	45.000	XMRP	1339.9100	IN. XC
		SS-6	20.000	10RB	9.700	YMRP	.0000	IN. YC
						ZMRP	190.7500	IN. ZC
						SCALE	.0300	

INCREMENTAL ROLLING MOMENT COEFFICIENT(STABILITY AXIS), DCSL

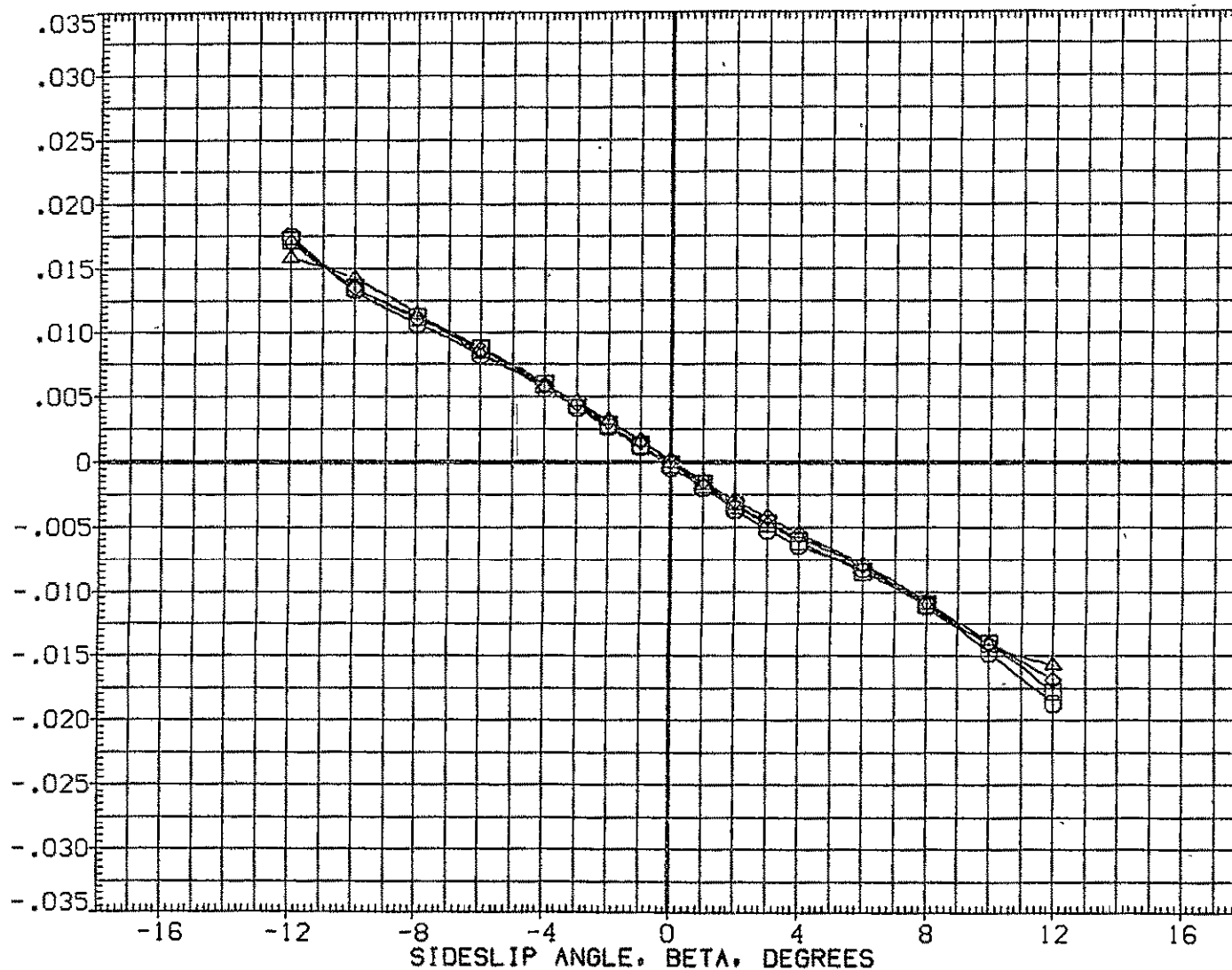


FIG.148 747+ORB(10 DEG)+TIP FINS+STD SPD BRK,FLAPS UP LAUNCH,ALPHA1= 6 DEG 747

SYMBOL	MACH	PARAMETRIC VALUES				REFERENCE INFORMATION		
○	.300	ALPHA1	6.000	STAB	1.000	SREF	2690.0000	SQ.FT.
□	.500	RUD-U	.000	RUD-L	.000	LREF	474.8100	IN.
◇	.600	ELV-1B	.000	ELV-0B	.000	BREF	936.6800	IN.
△	.701	S1-2	.000	S3-4	45.000	XMRP	1109.0000	IN. X0
		S5-6	20.000	10RB	9.700	YMRP	.0000	IN. Y0
						ZMRP	375.0000	IN. Z0
						SCALE	.0300	

SIDE FORCE COEFFICIENT, CY

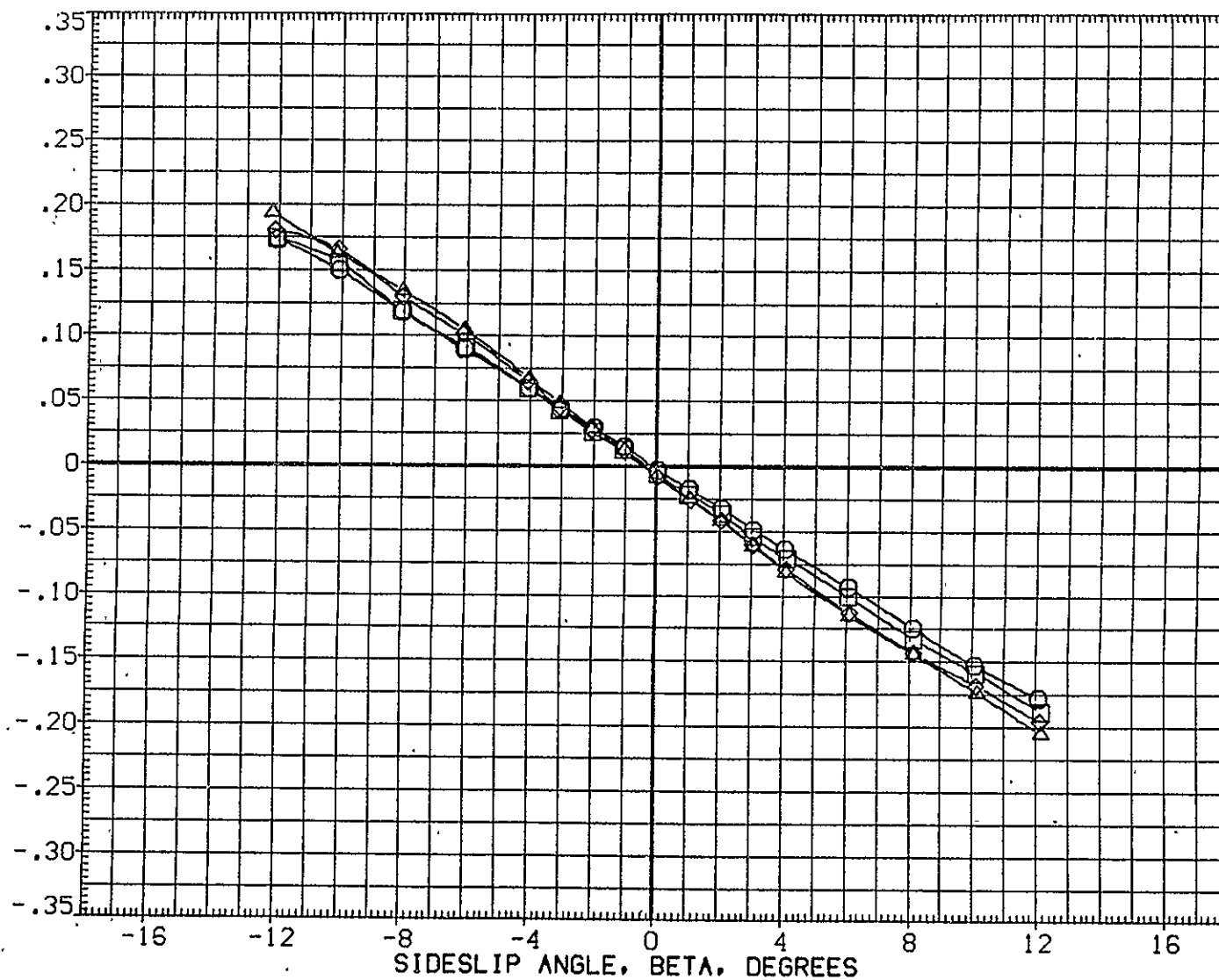


FIG.149 747+ORB(10 DEG)+TIP FINS+STD SPD BRK,FLAPS UP LAUNCH,ALPHA1= 6 DEG ORB

CA5 ORB TC5 AT38.2 (PRES. K1 F0 H15.6 V9.1)(XGM097)

SYMBOL	MACH	PARAMETRIC VALUES
○	.300	ALPHA1 6.000 STAB 1.000
□	.500	RUD-U .000 RUD-L .000
◇	.600	ELV-1B .000 ELV-OB .000
△	.701	S1-2 .000 S3-4 45.000
		S5-6 20.000 10RB 9.700

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN. X0
YMRP	.0000	IN. Y0
ZMRP	375.0000	IN. Z0
SCALE	.0300	

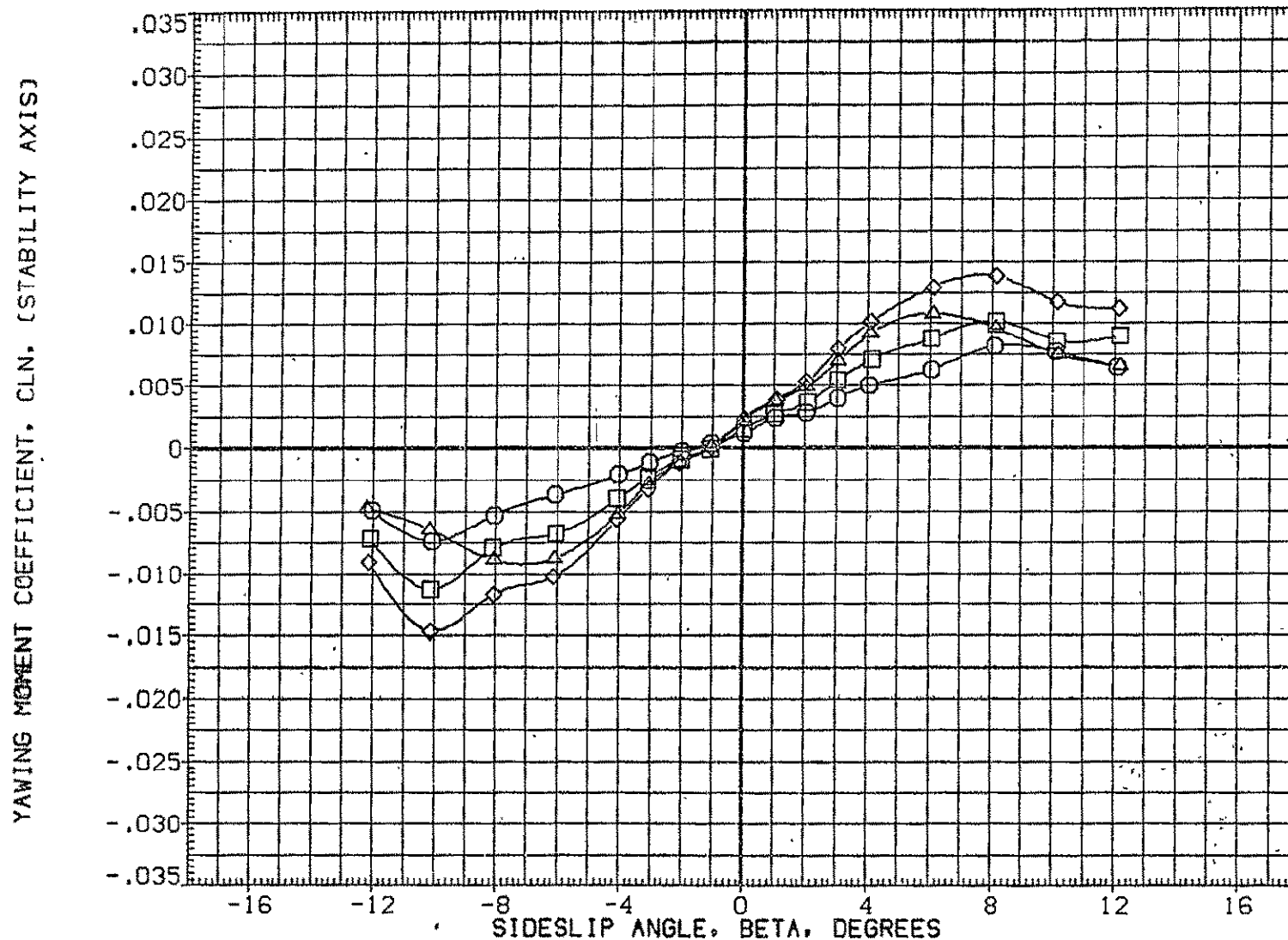


FIG.149 747+ORB(10 DEG)+TIP FINS+STD SPD BRK,FLAPS UP LAUNCH,ALPHA1= 6 DEG ORB

SYMBOL	MACH	PARAMETRIC VALUES	REFERENCE INFORMATION
○	.300	ALPHA1 6.000 STAB 1.000	SREF 2690.0000 SQ.FT.
□	.500	RUD-U .000 RUD-L .000	LREF 474.8100 IN.
◇	.600	ELV-1B .000 ELV-0B .000	BREF 936.6800 IN.
△	.701	S1-2 .000 S3-4 45.000	XMRP 1109.0000 IN. X0
		S5-6 20.000 10RB 9.700	YMRP .0000 IN. Y0
			ZMRP 375.0000 IN. Z0
			SCALE .0300

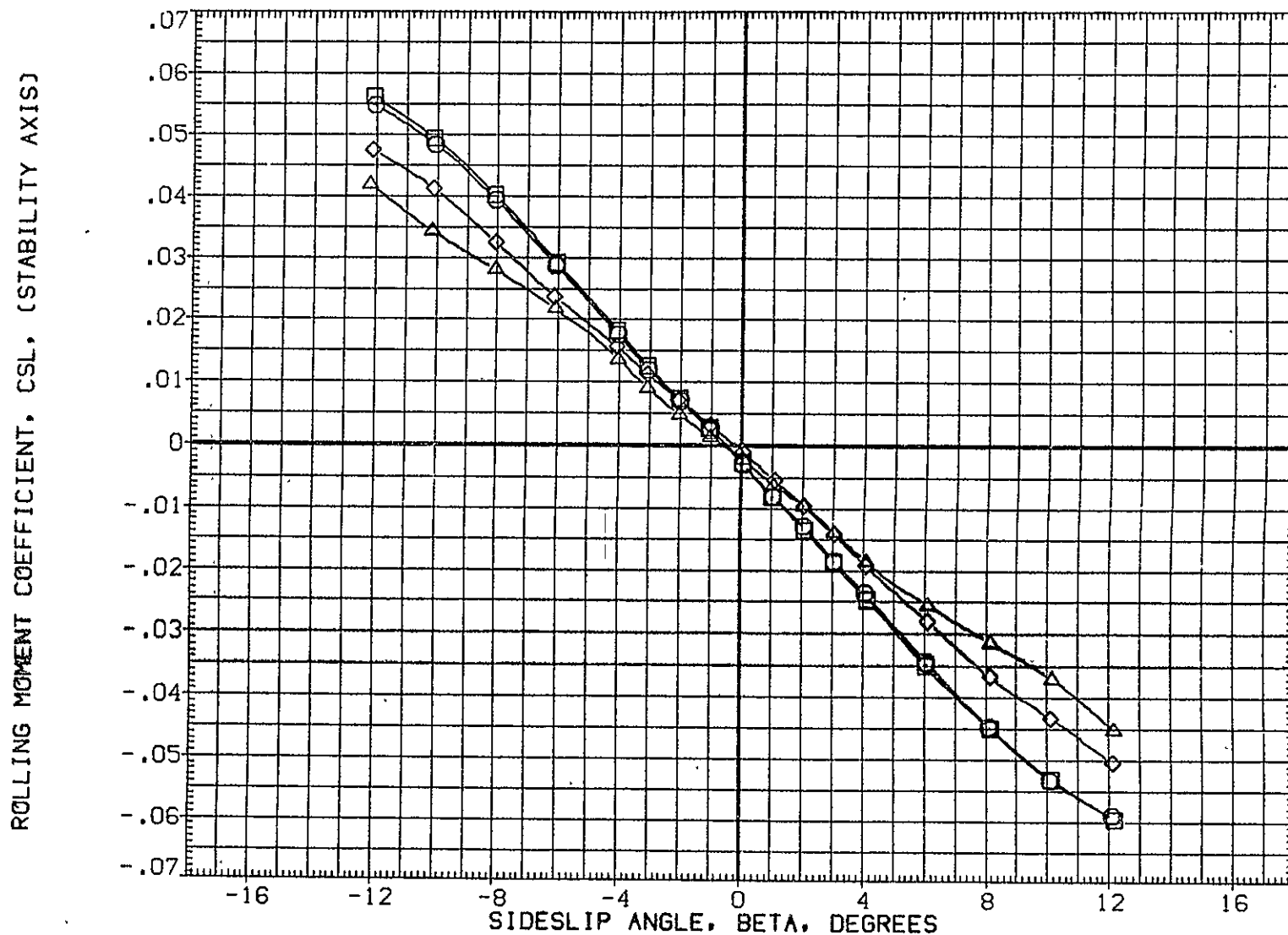


FIG.149 747+0RB(10 DEG)+TIP FINS+STD SPD BRK,FLAPS UP LAUNCH,ALPHA1= 6 DEG 0RB

CA5 K1 FO H15.1A

(PLUS. ORB NOZ AT38.2A)(RGM100)

SYMBOL

MACH

PARAMETRIC VALUES

○
□
◇
△.301
.500
.601
.700ALPHA1
ELV-1B
S1-2
S5-66.000
.000
.000
20.000STAB
ELV-0B
S3-4
10RB-1.000
.000
45.000
7.850

REFERENCE INFORMATION

SREF	5500.0000	SQ.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

SIDE FORCE COEFFICIENT, CY

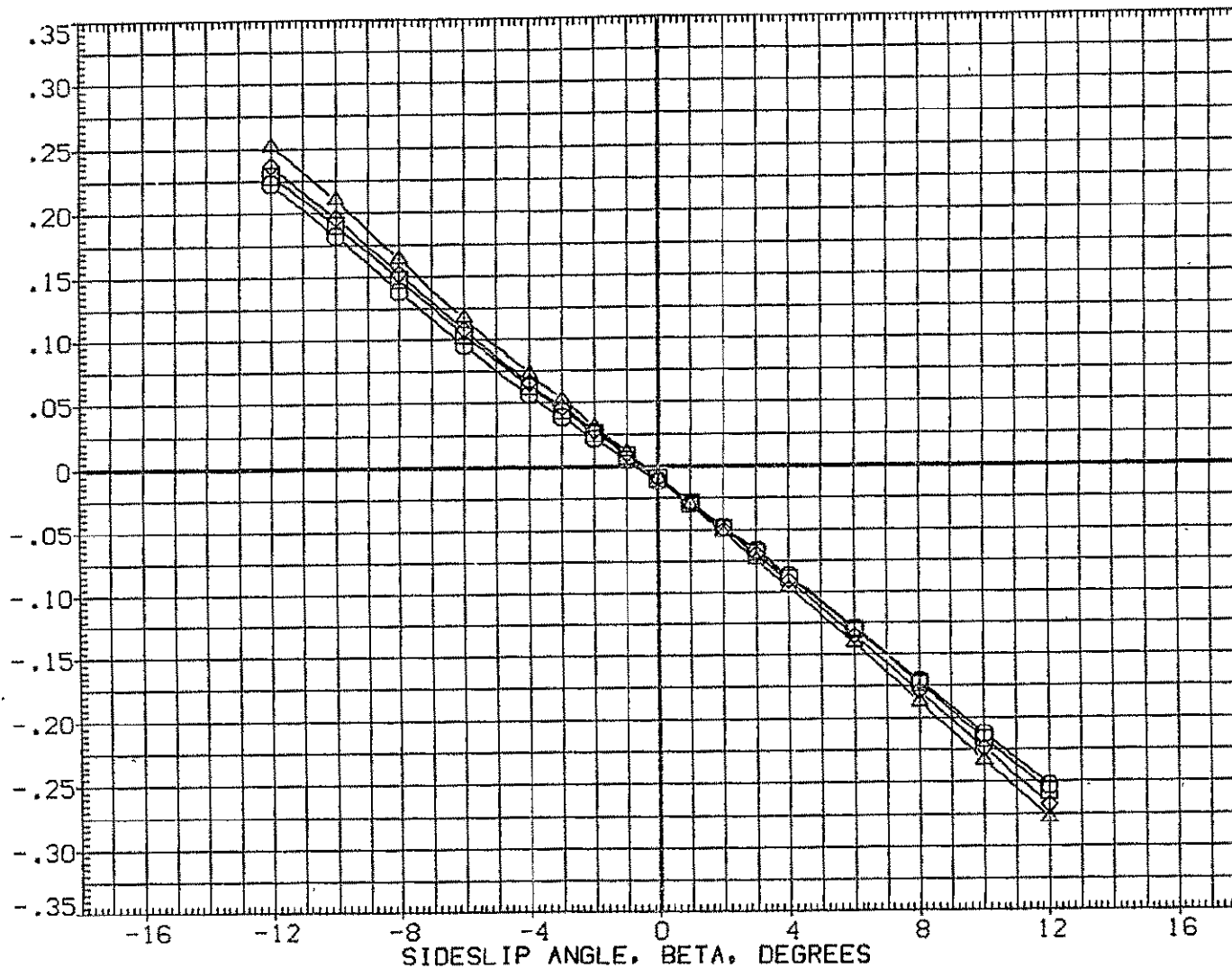


FIG.150 747+ORB(8 DEG)+STD SP,VERT TAIL OFF,FLAP UP LNCH,ALPHA1= 6,TC OFF TOTAL

CAS N1 FO H15.1A

(PLUS. ORB NOZ AT38.2A)(RGM100)

SYMBOL

MACH

PARAMETRIC VALUES

○
□
◇
△.301
.500
.601
.700ALPHA1
ELV-1B
S1-2
S5-66.000
.000
.000
20.000STAB
ELV-0B
S3-4
ICRB-1.000
.000
45.000
7.850

REFERENCE INFORMATION

SREF	5500.0000	SQ.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

YAWING MOMENT COEFFICIENT, CLN. (STABILITY AXIS)

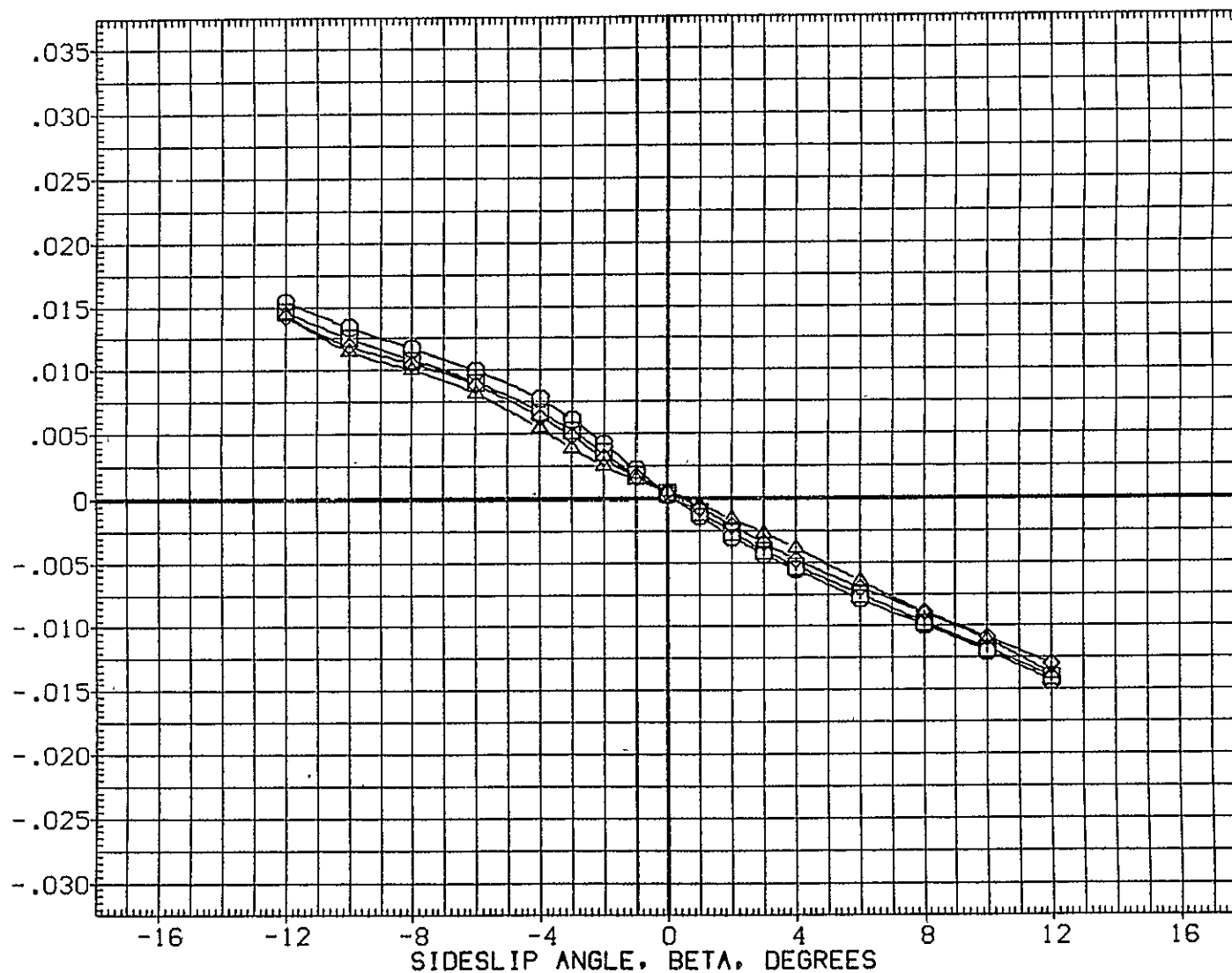


FIG.150 747+ORB(8 DEG)+STD SP,VERT TAIL OFF,FLAP UP LNCH,ALPHA1= 6,TC OFF TOTAL

CA5 K1 FO H15.1A

(PLUS. ORB NOZ AT38.2A)(RGM100)

SYMBOL	MACH	PARAMETRIC VALUES
○	.301	ALPHA I 6.000 STAB -1.000
□	.500	ELV-1B .000 ELV-OB .000
◇	.601	S1-2 .000 S3-4 45.000
△	.700	S5-6 20.000 ICRB 7.850

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

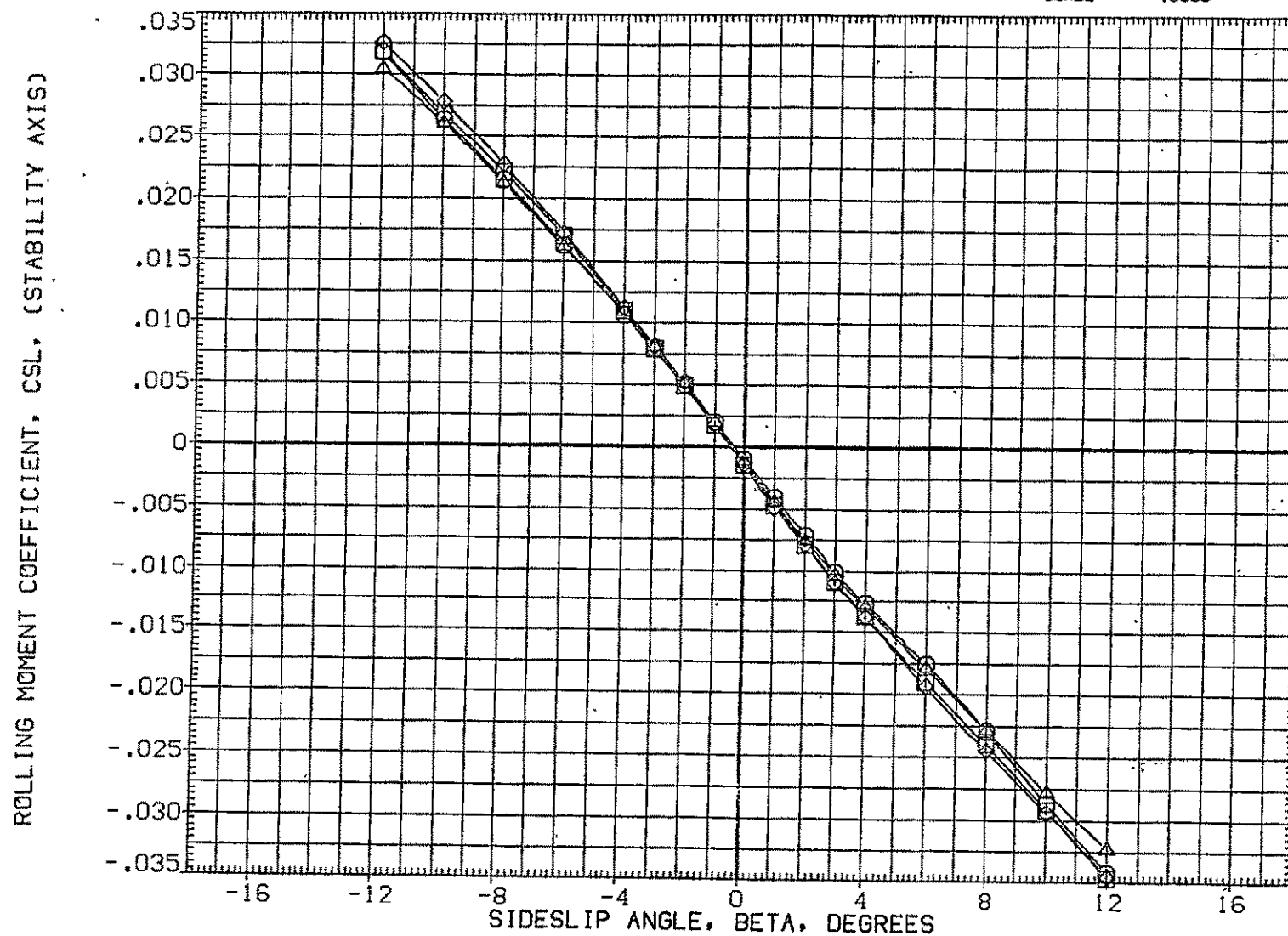


FIG.150 747+ORB(8 DEG)+STD SP,VERT TAIL OFF,FLAP UP LNCH,ALPHA I= 6,TC OFF TOTAL
PAGE 553

SYMBOL	MACH	PARAMETRIC VALUES
○	.301	ALPHA1 6.000 STAB -1.000
□	.500	ELV-1B .000 ELV-0B .000
◇	.601	S1-2 .000 S3-4 45.000
△	.700	S5-6 20.000 10RB 7.850

REFERENCE INFORMATION		
SREF	5500.0000	SQ. FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XM RP	1339.9100	IN. XC
YM RP	.0000	IN. YC
ZM RP	190.7500	IN. ZC
SCALE	.0300	

INCREMENTAL SIDE FORCE COEFFICIENT(STABILITY AXIS), DCY

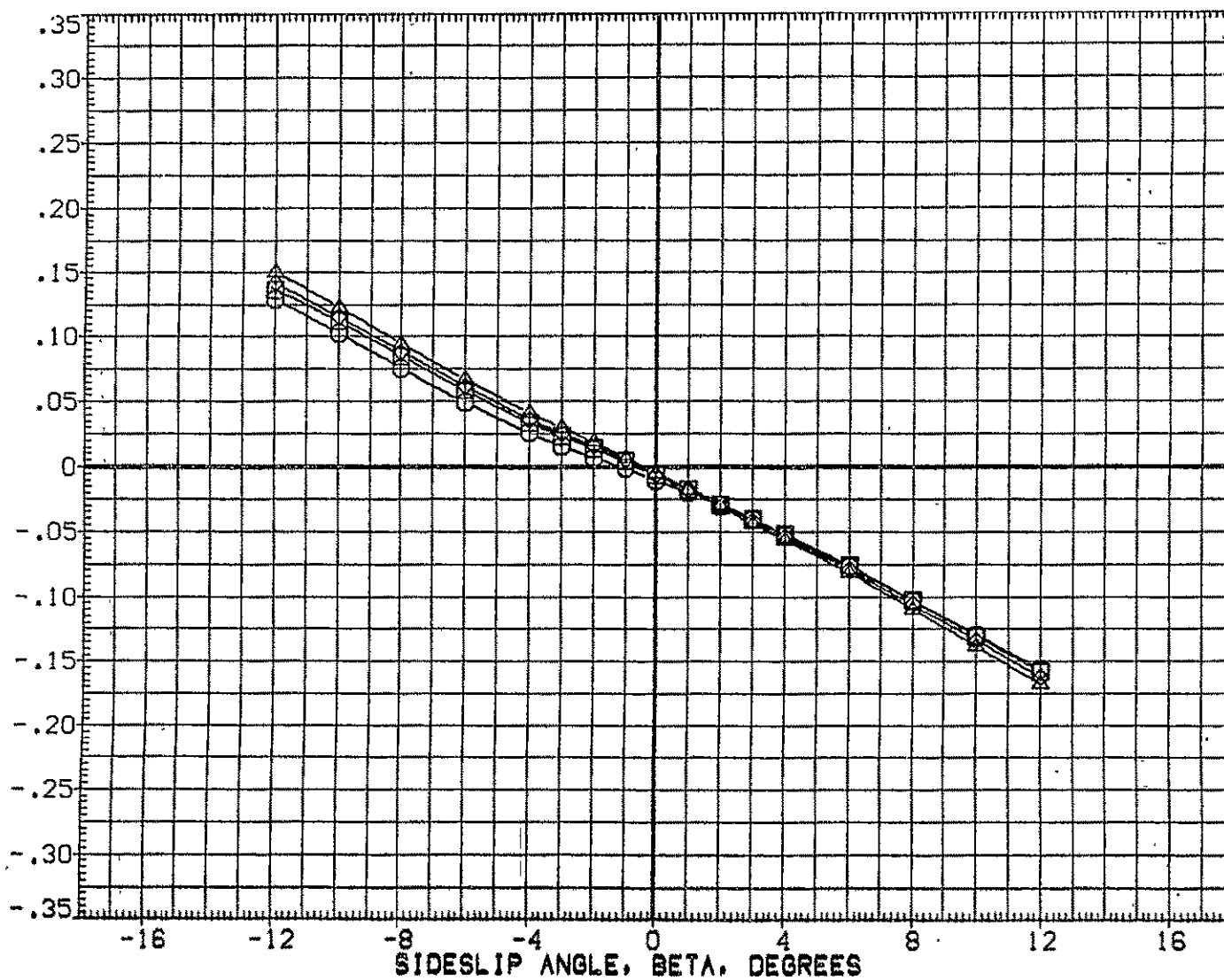


FIG.151 747+ORB(8 DEG)+STD SP,VERT TAIL OFF,FLAP UP LNCH,ALPHA1= 6,TC OFF 747

CA5 K1 FO H15.1A		MINUS ORB NOZ		(BGM100)			
SYMBOL	MACH	PARAMETRIC VALUES				REFERENCE INFORMATION	
○	.301	ALPHA1	6.000	STAB	-1.000	SREF	5500.0000 SQ.FT.
□	.500	ELV-18	.000	ELV-08	.000	LREF	327.8000 IN.
◇	.601	S1-2	.000	S3-4	45.000	BREF	2348.0000 IN.
△	.700	20.000	10RB	7.850	XMRP	1339.9100 IN. XC	
						YMRP	.0000 IN. YC
						ZMRP	190.7500 IN. ZC
						SCALE	.0300

INCREMENTAL YAWING MOMENT COEFFICIENT (STABILITY AXIS), DCLN

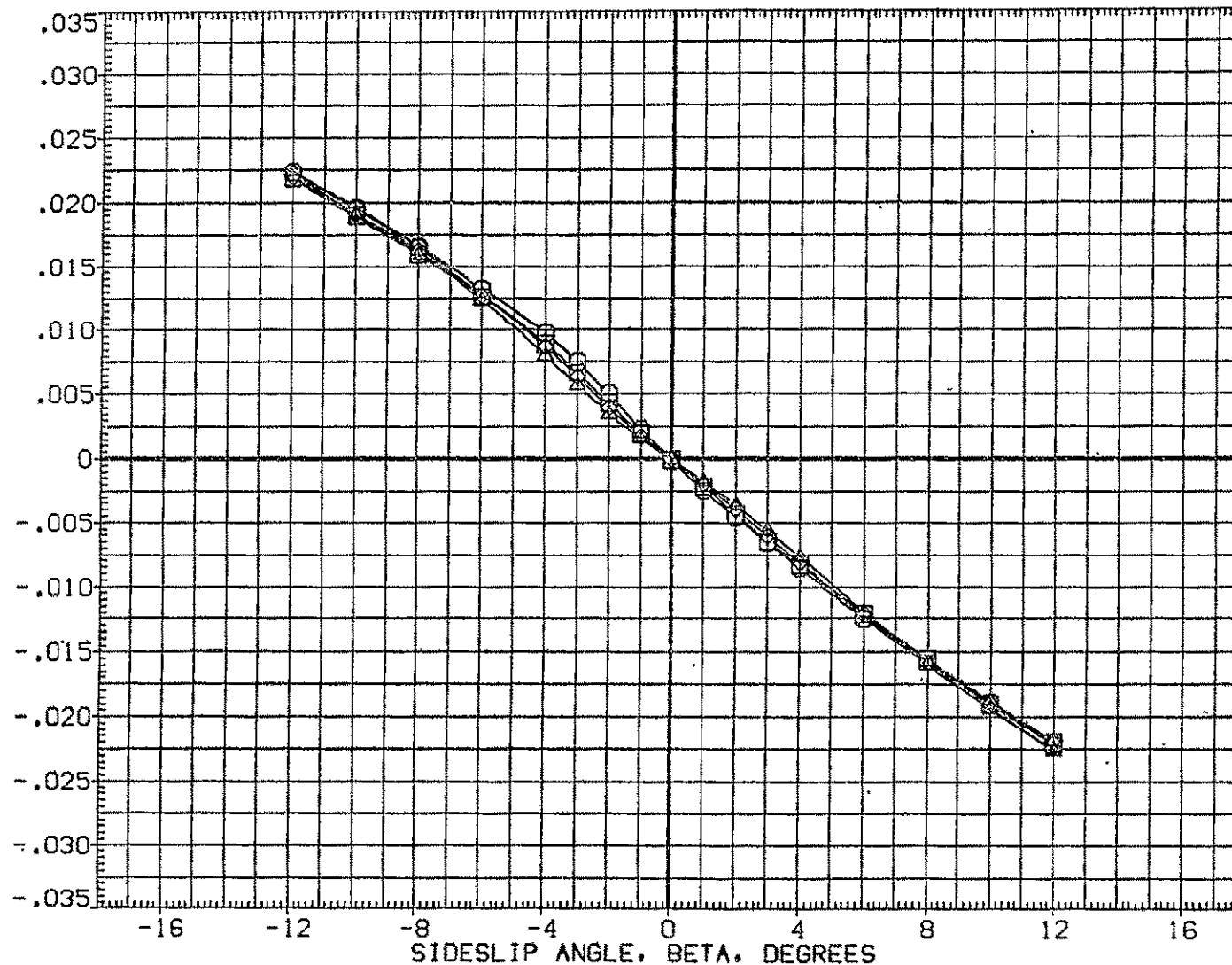


FIG.151 747+0RB(8 DEG)+STD SP,VERT TAIL OFF,FLAP UP LNCH,ALPHA1= 6,TC OFF 747

SYMBOL	MACH	PARAMETRIC VALUES
○	.301	ALPHA1 6.000 STAB -1.000
□	.500	ELV-1B .000 ELV-0B .000
◇	.601	S1-2 .000 S3-4 45.000
△	.700	S5-6 20.000 10RB 7.850

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

INCREMENTAL ROLLING MOMENT COEFFICIENT(STABILITY AXIS), DCSL

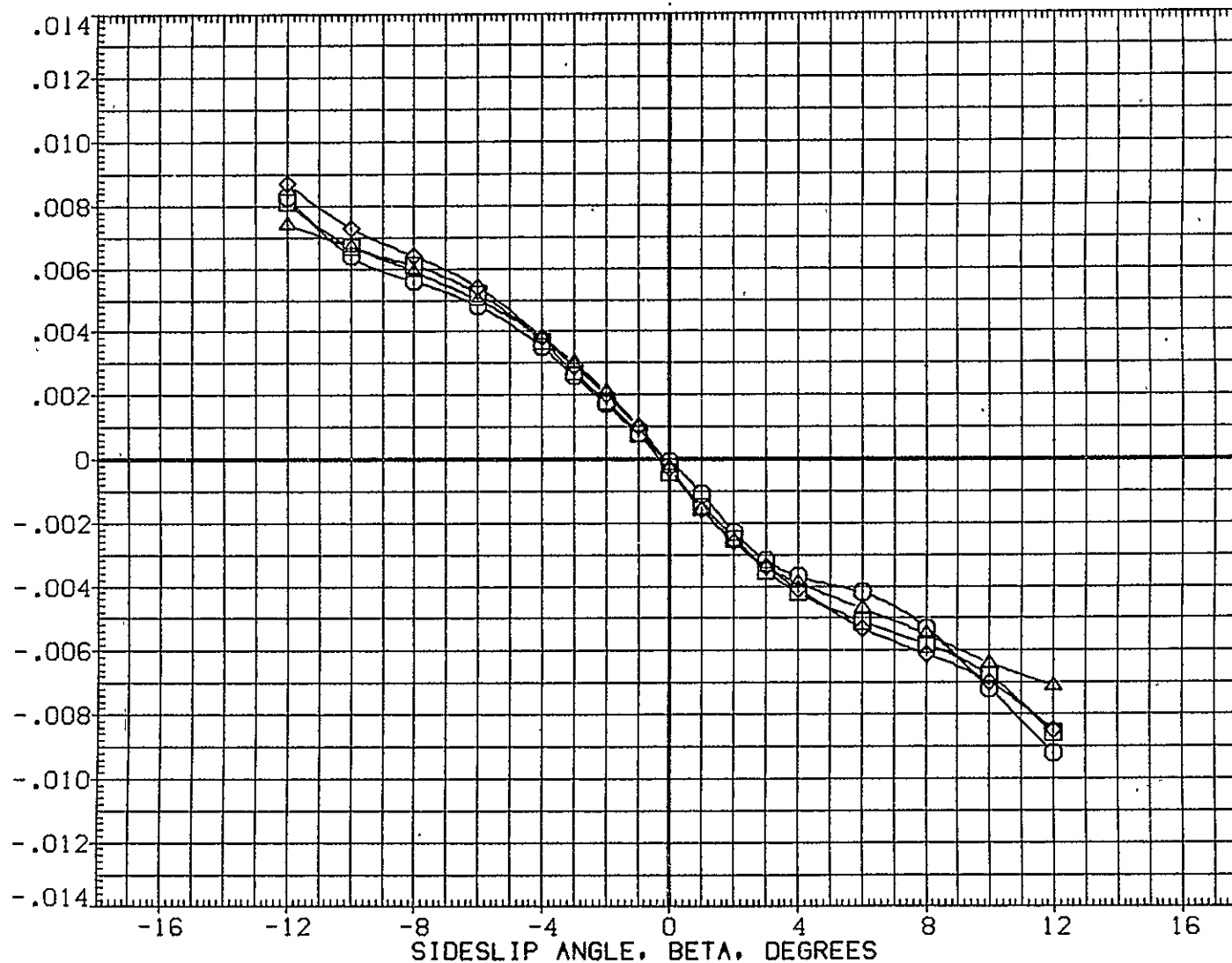


FIG.151 747+0RB(8 DEG)+STD SP, VERT TAIL OFF, FLAP UP LNCH, ALPHA1= 6, TC OFF 747

CA5 ORB NOZ AT38.2A (PRES. K1 FO H15.1A

(XGM100)

SYMBOL	MACH	PARAMETRIC VALUES
○	.301	ALPHA1 6.000 STAB -1.000
□	.500	ELV-1B .000 ELV-0B .000
◇	.600	S1-2 .000 S3-4 45.000
△	.699	S5-6 20.000 10RB 7.850

REFERENCE INFORMATION		
SREF	2690.0000	SG.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN. X0
YMRP	.0000	IN. Y0
ZMRP	375.0000	IN. Z0
SCALE	.0300	

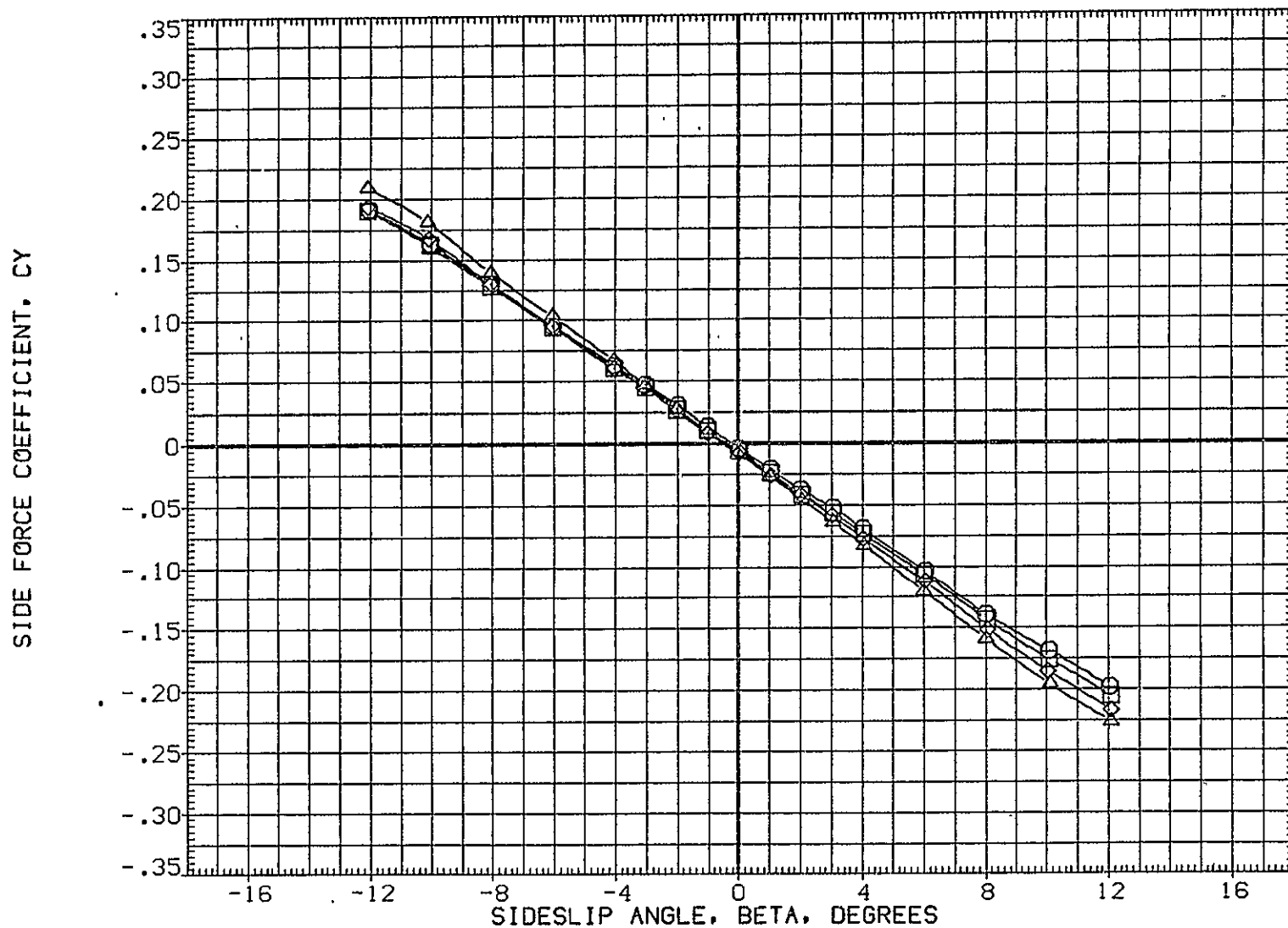


FIG.152 747+ORB(8 DEG)+STD SP,VERT TAIL OFF,FLAP UP LNCH,ALPHA1= 6,TC OFF ORB

SYMBOL	MACH	PARAMETRIC VALUES
○	.301	ALPHA1 6.000 STAB -1.000
□	.500	ELV-1B .000 ELV-0B .000
◇	.600	S1-2 .000 S3-4 45.000
△	.699	S5-6 20.000 10RB 7.850

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN. X0
YMRP	.0000	IN. Y0
ZMRP	375.0000	IN. Z0
SCALE	.0300	

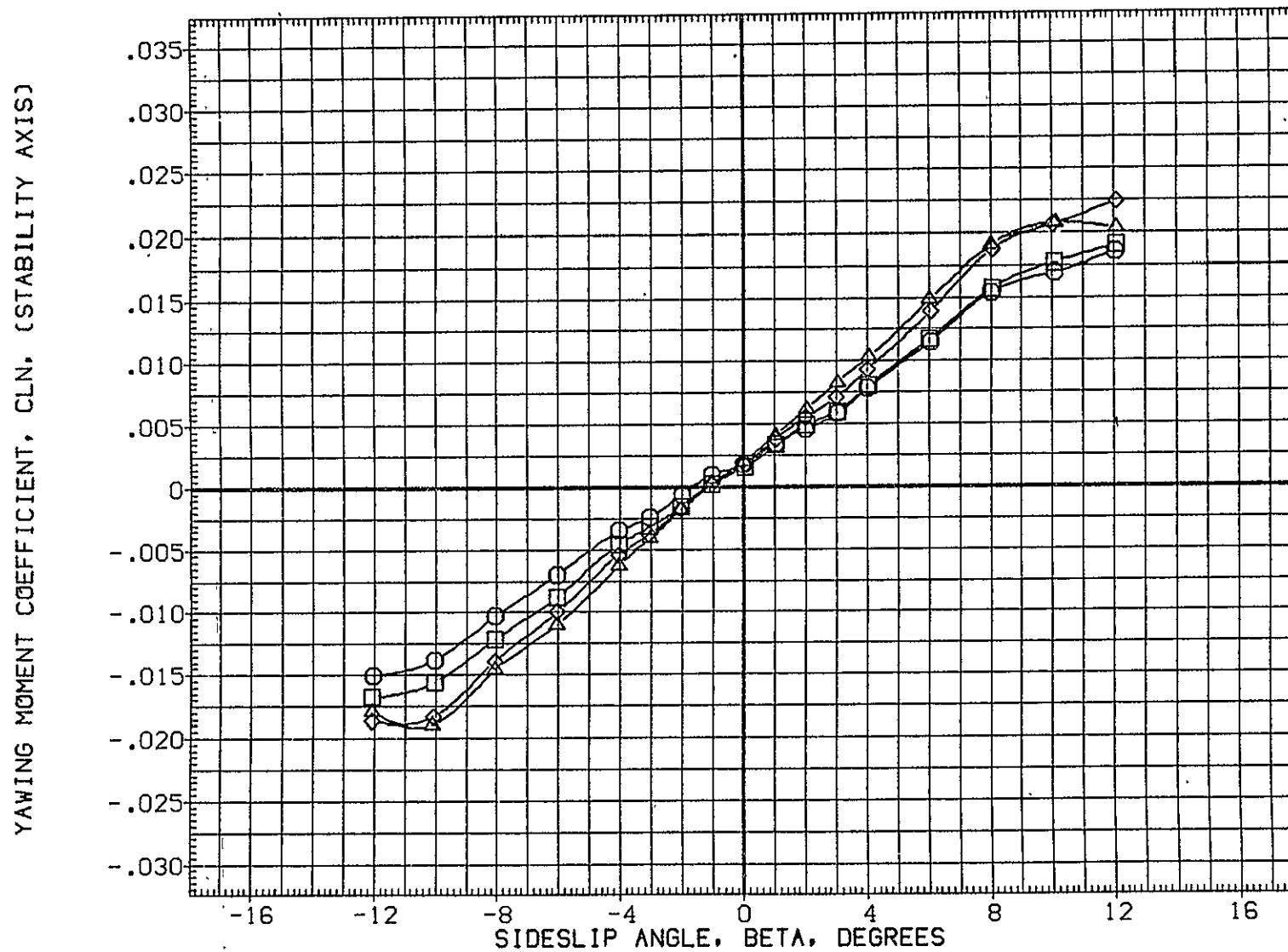


FIG.152 747+ORB(8 DEG)+STD SP,VERT TAIL OFF,FLAP UP LNCH,ALPHA1= 6,TC OFF ORB

CA5 0RB NOZ AT38.2A (PRES. K1 FO H15.1A

(XGM100)

SYMBOL	MACH	PARAMETRIC VALUES
○	.301	ALPHA1 6.000 STAB -1.000
□	.500	ELV-1B .000 ELV-0B .000
◇	.600	S1-2 .000 S3-4 45.000
△	.699	S5-6 20.000 10RB 7.850

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN. X0
YMRP	.0000	IN. Y0
ZMRP	375.0000	IN. Z0
SCALE	.0300	

ROLLING MOMENT COEFFICIENT, CSL, (STABILITY AXIS)

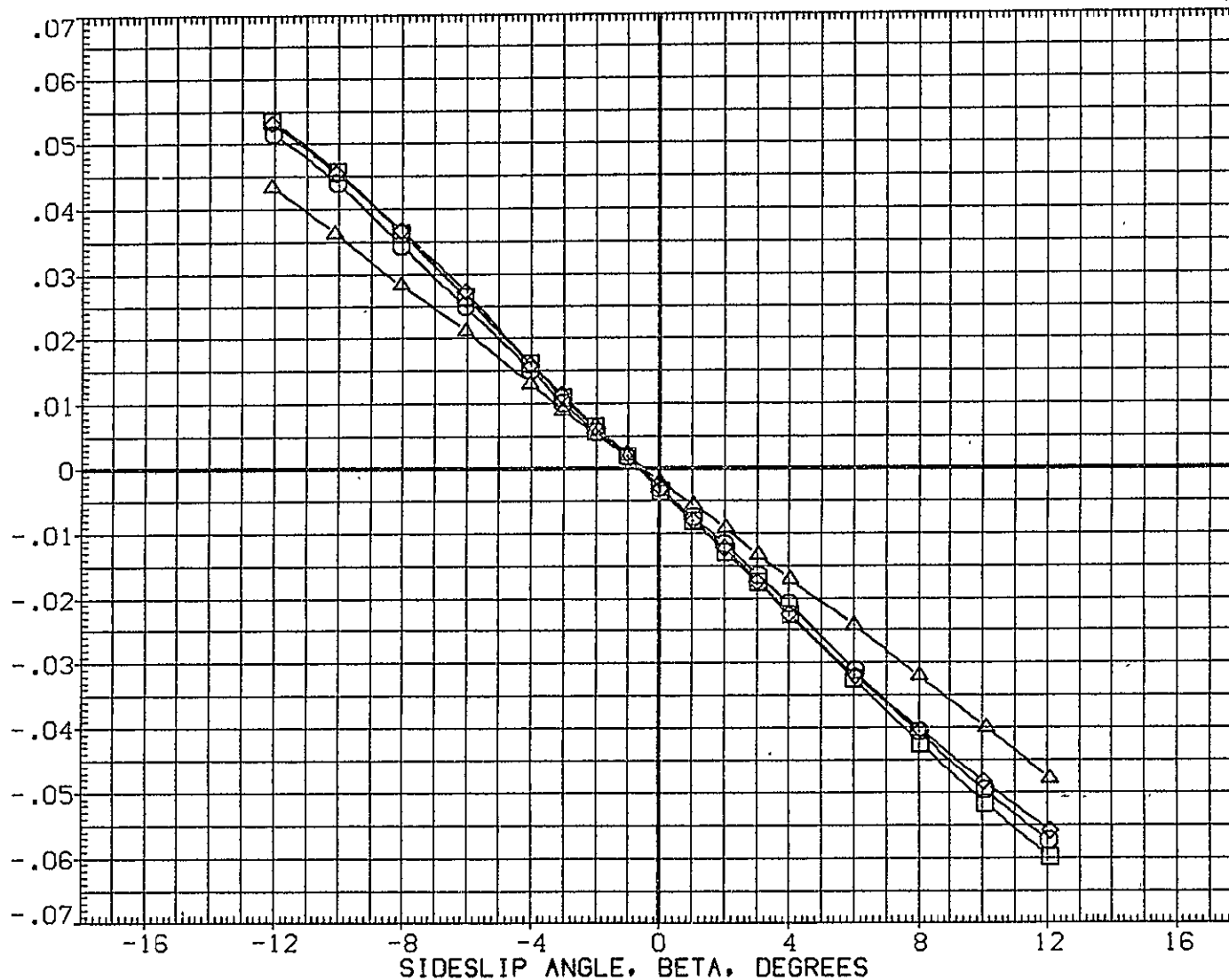


FIG.152 747+0RB(8 DEG)+STD SP,VERT TAIL OFF,FLAP UP LNCH,ALPHA1= 6,TC OFF 0RB

SYMBOL

MACH

PARAMETRIC VALUES

□ ○

.500

ALPHA-I

6.000

STAB

1.000

.600

RUD-U

.000

ELV-IB

.000

ELV-OB

3.000

SI-2

.000

S3-4

45.000

SS-6

20.000

IORB

7.850

ORBELV

5.000

REFERENCE INFORMATION

SREF	5500.0000	SQ.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

SIDE FORCE COEFFICIENT, CY

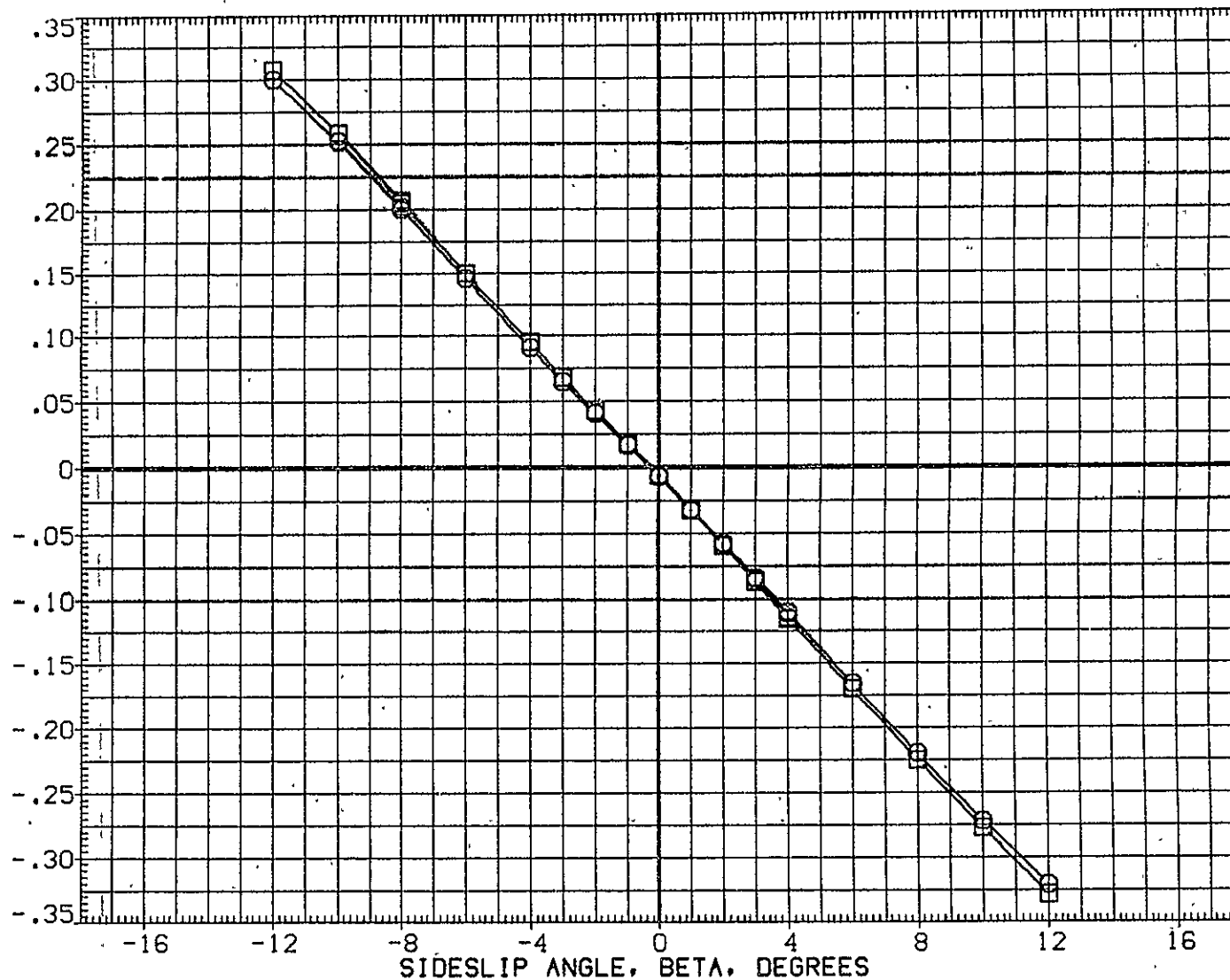


FIG.153 747+ORB(8 DEG)+TIP FINS+STD SP,FLAPS UP LNCH,ALPI=6,ORB ELEV=5

TOTAL

PAGE

560

CA5 K1 FO H15.6 V9.1 (PLUS. ORB TC5 AT38.2)(RGM088)

SYMBOL	MACH	PARAMETRIC VALUES
○	.500	ALPHA1 6.000 STAB 1.000
□	.600	
		ELV-OB 3.000 SI-2 .000
		S3-4 45.000 S5-6 20.000
		IORB 7.850 ORBELV 5.000

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

YAWING MOMENT COEFFICIENT, CLN. (STABILITY AXIS)

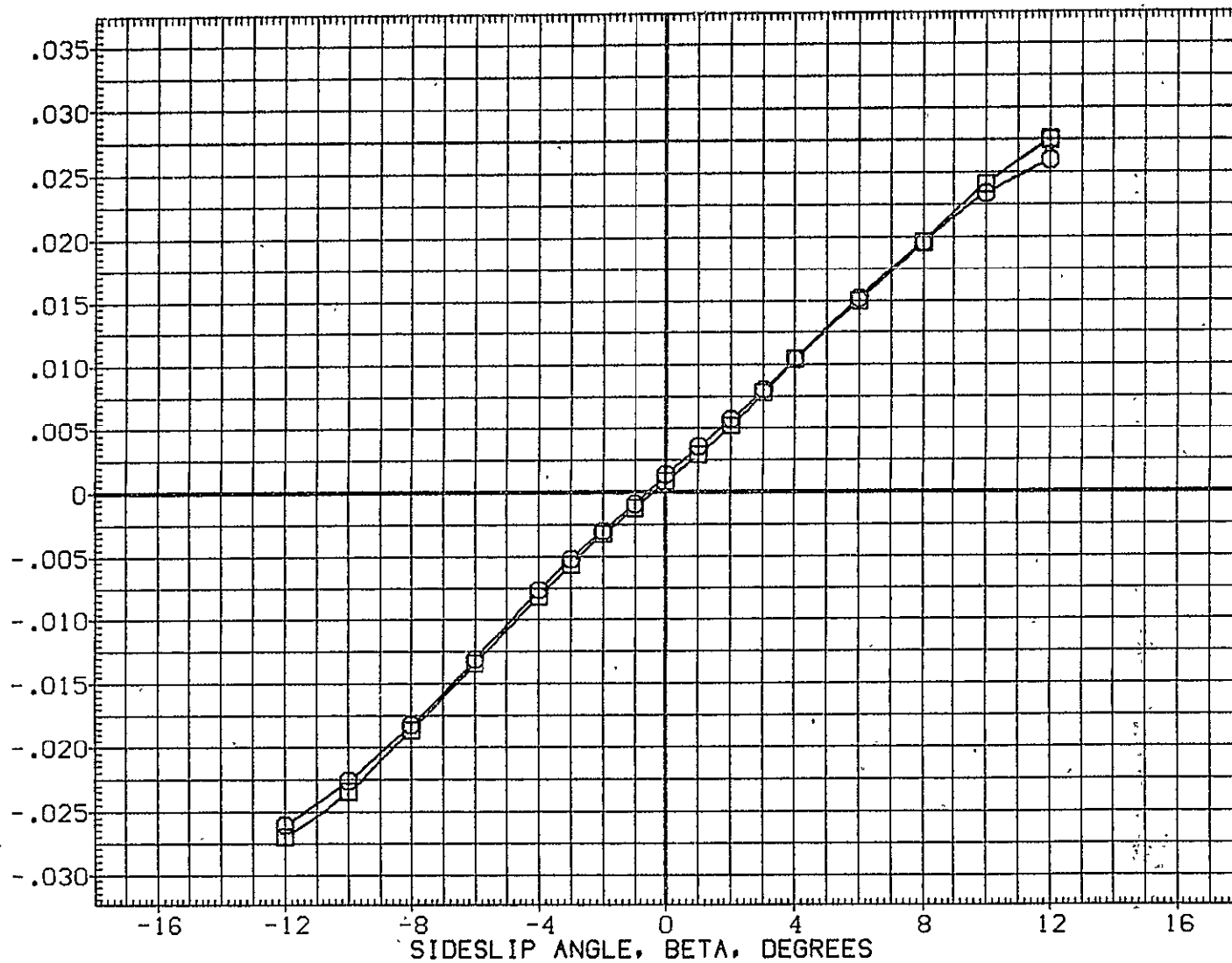


FIG.153 747+ORB(8 DEG)+TIP FINS+STD SP,FLAPS UP LNCH,ALPI=6,ORB ELEV=5 TOTAL

SYMBOL

○
□

MACH

.500

ALPHA I

PARAMETRIC VALUES

6.000

STAB

1.000

RUD-U

.000

ELV-1B

.000

ELV-OB

3.000

S1-2

.000

S3-4

45.000

S5-6

20.000

IORB

7.850

ORBELV

5.000

REFERENCE INFORMATION

SREF	5500.0000	SQ.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

ROLLING MOMENT COEFFICIENT, CSL. (STABILITY AXIS)

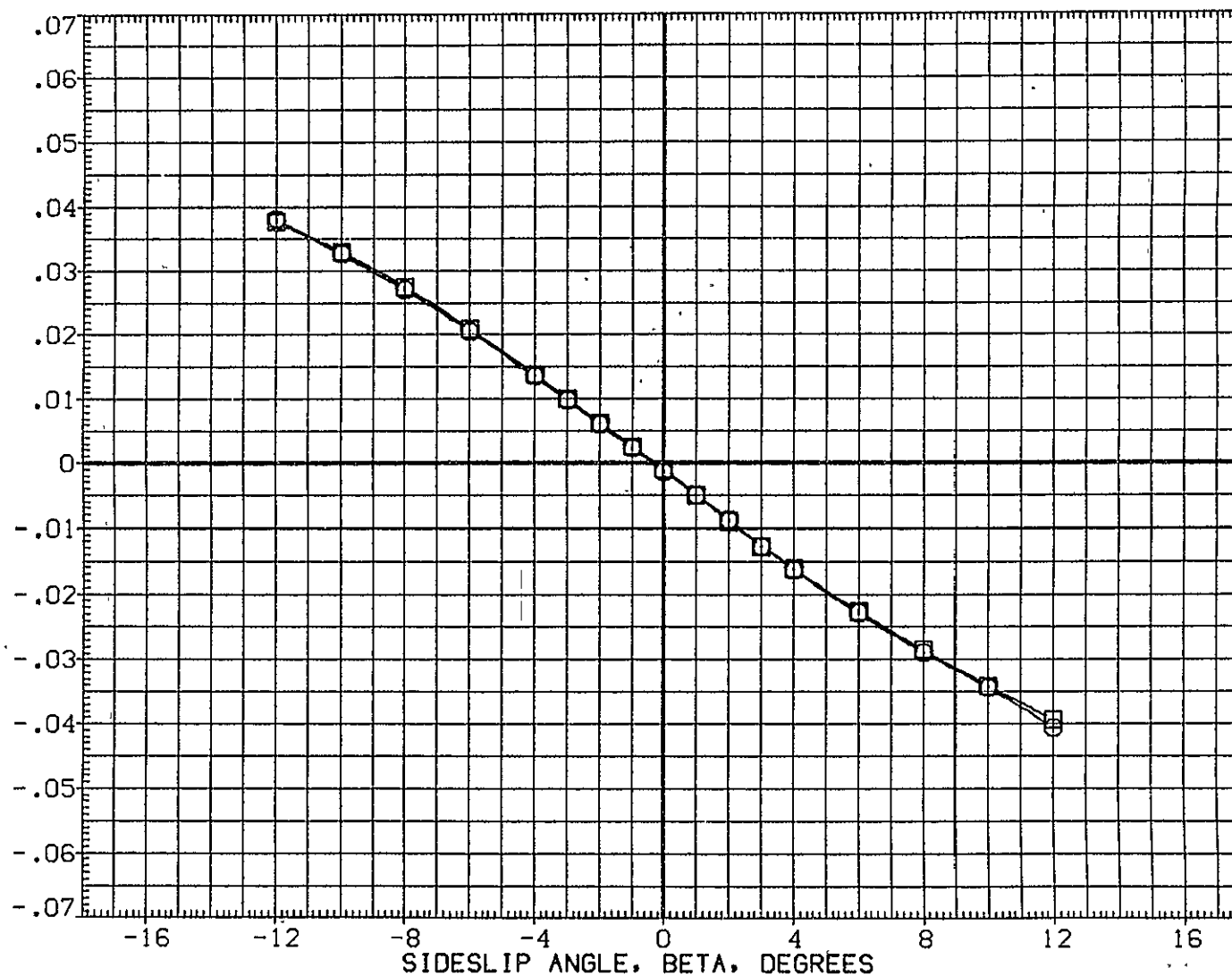


FIG.153 747+ORB(8 DEG)+TIP FINS+STD SP,FLAPS UP LNCH,ALPI=6,ORB ELEV=5

TOTAL

PAGE

562

CAS K1 FO H15.6 V9.1 MINUS ORB TC5 AT38.2 (BGM088)

SYMBOL
○
□

MACH	PARAMETRIC VALUES			
.500	ALPHA1	6.000	STAB	1.000
.600	RUD-U	.000	ELV-1B	.000
	ELV-0B	3.000	S1-2	.000
	S3-4	45.000	S5-6	20.000
	10RB	7.850	0RBELV	5.000

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRF	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

INCREMENTAL SIDE FORCE COEFFICIENT(STABILITY AXIS), DCY

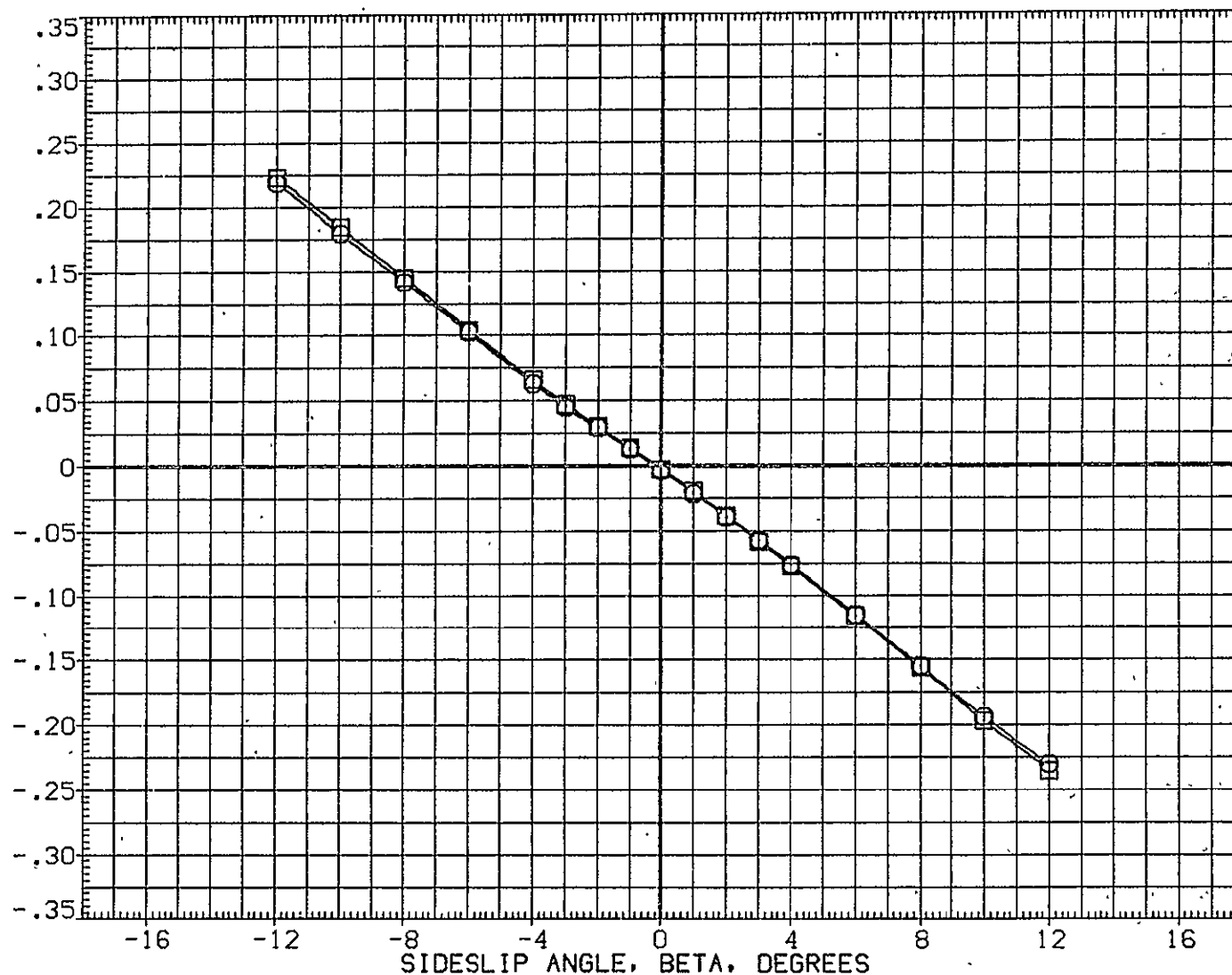


FIG.154 747+0RB(8 DEG)+TIP FINS+STD SP,FLAPS UP LNCH,ALPI=6,0RB ELEV=5

747

SYMBOL

○
□

MACH

.500

.600

ALPHA I

RUD-U

ELV-OB

S3-4

IORB

PARAMETRIC VALUES

6.000

.000

3.000

45.000

7.850

STAB

ELV-IB

S1-2

S5-6

ORB ELV

1.000

.000

.000

20.000

5.000

REFERENCE INFORMATION

SREF

5500.0000

SQ.FT.

LREF

327.8000

IN.

BREF

2348.0000

IN.

XMRP

1339.9100

IN. XC

YMRP

.0000

IN. YC

ZMRP

190.7500

IN. ZC

SCALE

.0300

INCREMENTAL YAWING MOMENT COEFFICIENT (STABILITY AXIS), DCLN

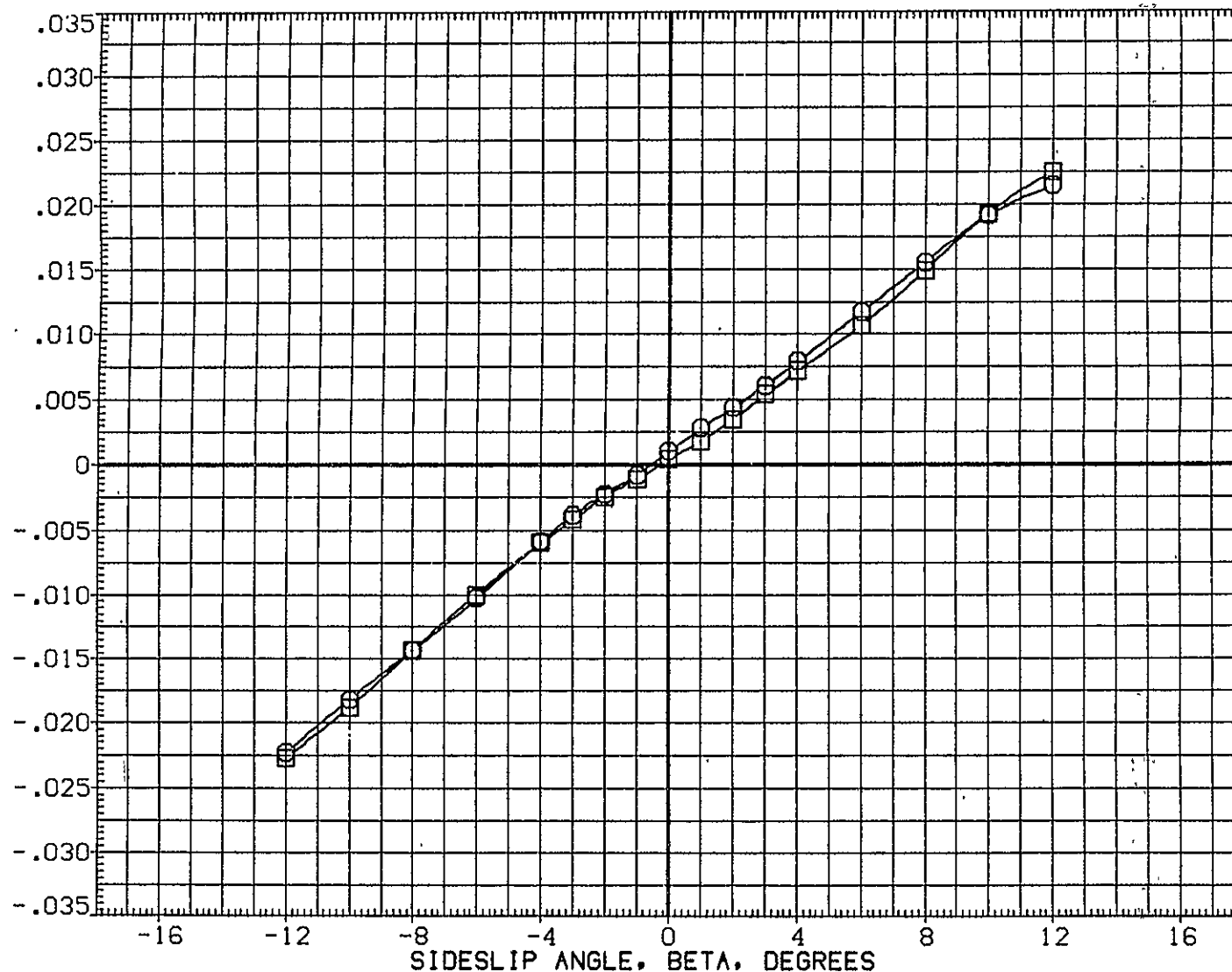


FIG.154 747+ORB(8 DEG)+TIP FINS+STD SP,FLAPS UP LNCH,ALPI=6,ORB ELEV=5

747

CA5 K1 F0 H15.6 V9.1 MINUS ORB TC5 AT38.2 (BGM088)

SYMBOL	MACH	PARAMETRIC VALUES			
○	.500	ALPHA	6.000	STAB	1.000
□	.600	RUD-U	.000	ELV-IB	.000
		ELV-OB	3.000	S1-2	.000
		S3-4	45.000	S5-6	20.000
		IORB	7.850	ORBELV	5.000

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

INCREMENTAL ROLLING MOMENT COEFFICIENT(STABILITY AXIS), DCSL

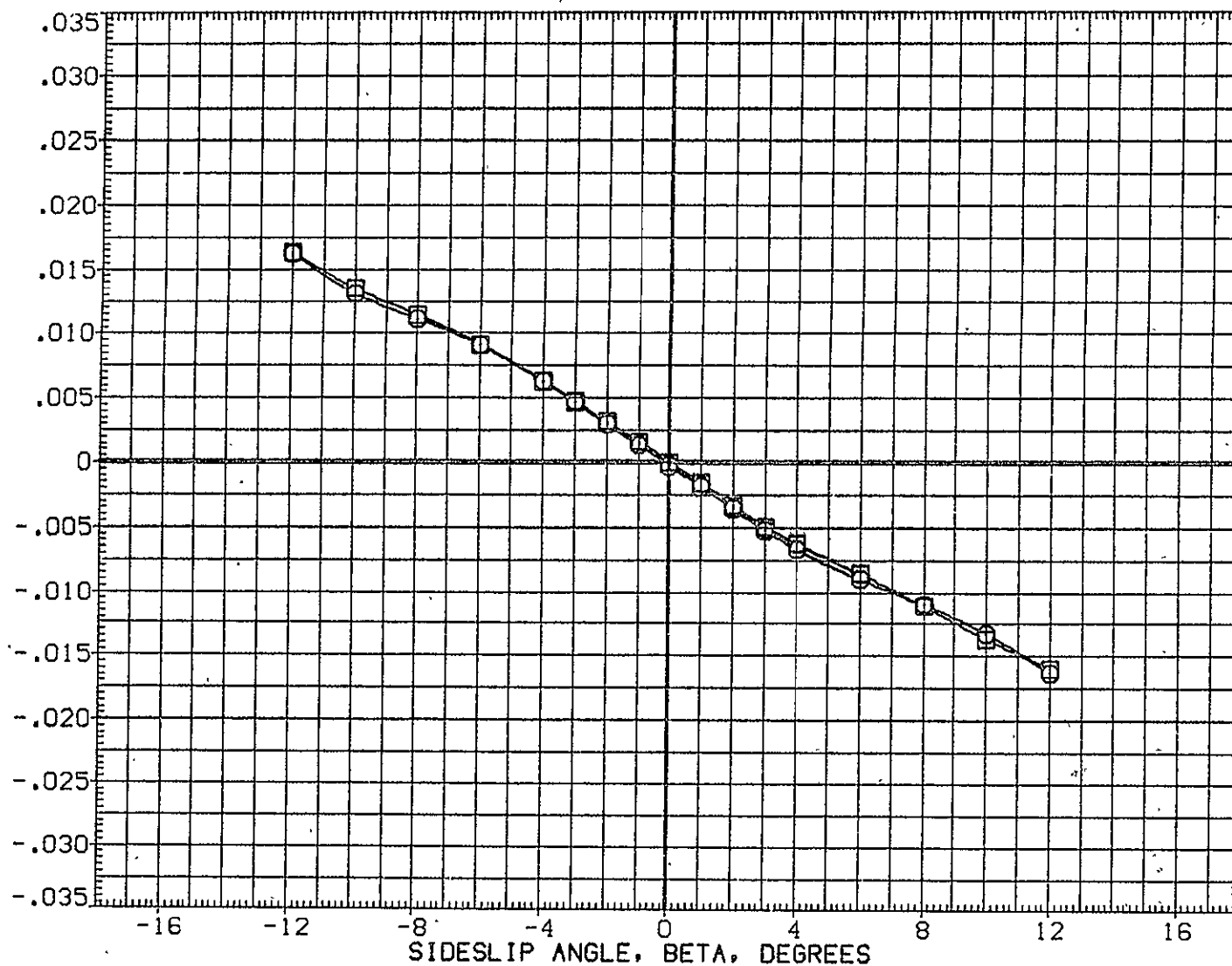


FIG.154 747+ORB(8 DEG)+TIP FINS+STD SP,FLAPS UP LNCH,ALPI=6,ORB ELEV=5

747

SYMBOL	MACH	PARAMETRIC VALUES			
○	.500	ALPHA I	6.000	STAB	1.000
□	.599	RUD-U	.000	ELV-IB	.000
		ELV-OB	3.000	S1-2	.000
		S3-4	45.000	S5-6	20.000
		ICRB	7.850	ORBELV	5.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN. X0
YMRP	.0000	IN. Y0
ZMRP	375.0000	IN. Z0
SCALE	.0300	

SIDE FORCE COEFFICIENT, CY

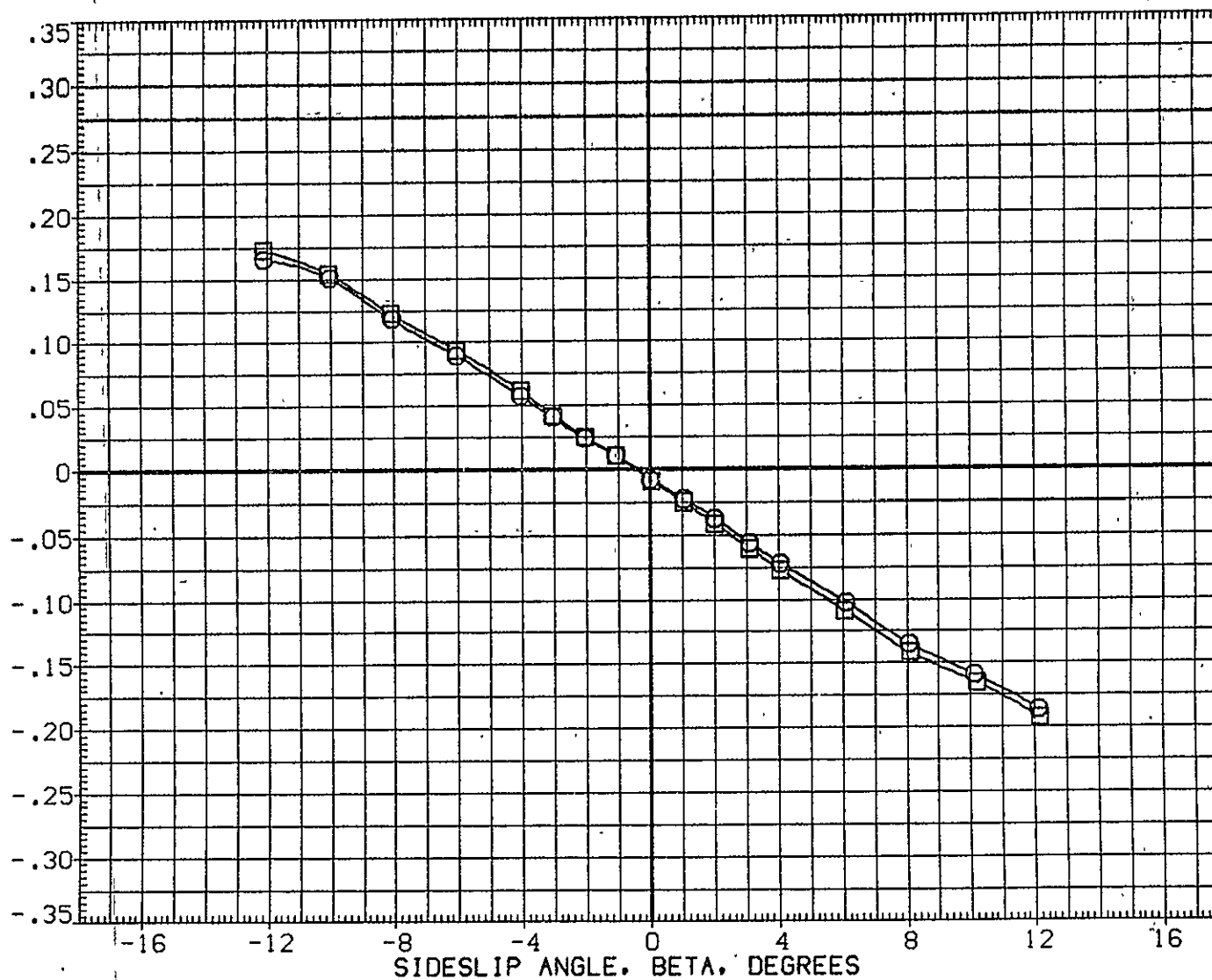


FIG.155 747+ORB(8 DEG)+TIP FINS+STD SP,FLAPS UP LNCH,ALPI=6,ORB ELEV=5

ORB

CA5 ORB TC5 AT38.2 (PRES. K1 FO H15.6 V9.1)(XGMO88)

SYMBOL	MACH	PARAMETRIC VALUES
○	.500	ALPHA I 6.000 STAB 1.000
□	.599	RUD-U .000 ELV-1B .000
		ELV-OB 3.000 S1-2 .000
		S3-4 45.000 S5-6 20.000
		IORB 7.850 ORBELV 5.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN. X0
YMRP	.0000	IN. Y0
ZMRP	375.0000	IN. Z0
SCALE	.0300	

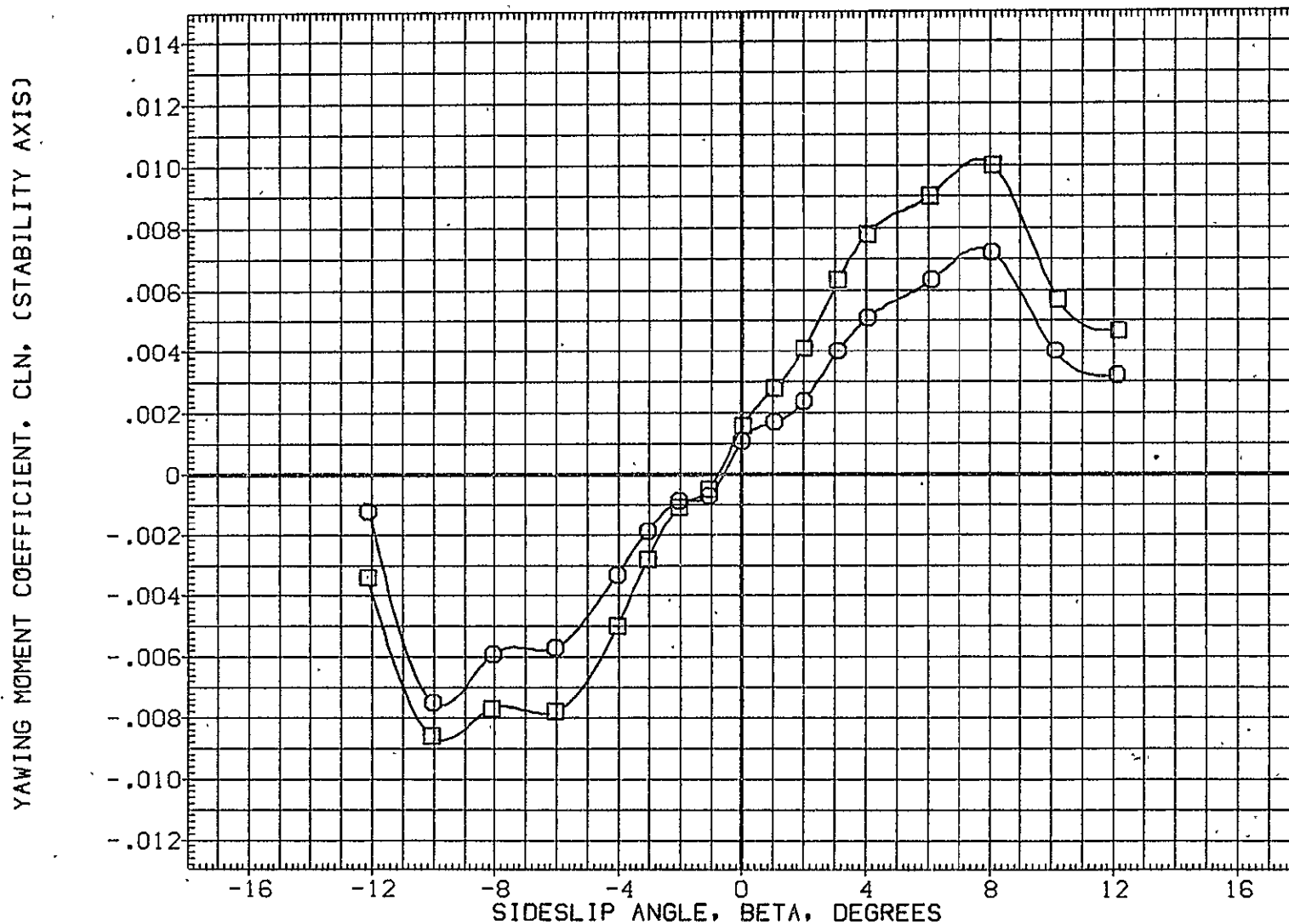


FIG.155 747+ORB(8 DEG)+TIP FINS+STD SP,FLAPS UP LNCH,ALPI=6,ORB ELV=5 ORB

SYMBOL	MACH	PARAMETRIC VALUES				REFERENCE INFORMATION		
○	.500	ALPHA I	6.000	STAB	1.000	SREF	2690.0000	SO. FT.
□	.599	RUD-U	.000	ELV-1B	.000	LREF	474.8100	IN.
		ELV-0B	3.000	S1-2	.000	BREF	936.6800	IN.
		S3-4	45.000	S5-6	20.000	XMRP	1109.0000	IN. X0
		10RB	7.850	ORBELV	5.000	YMRP	.0000	IN. Y0
						ZMRP	375.0000	IN. Z0
						SCALE	.0300	

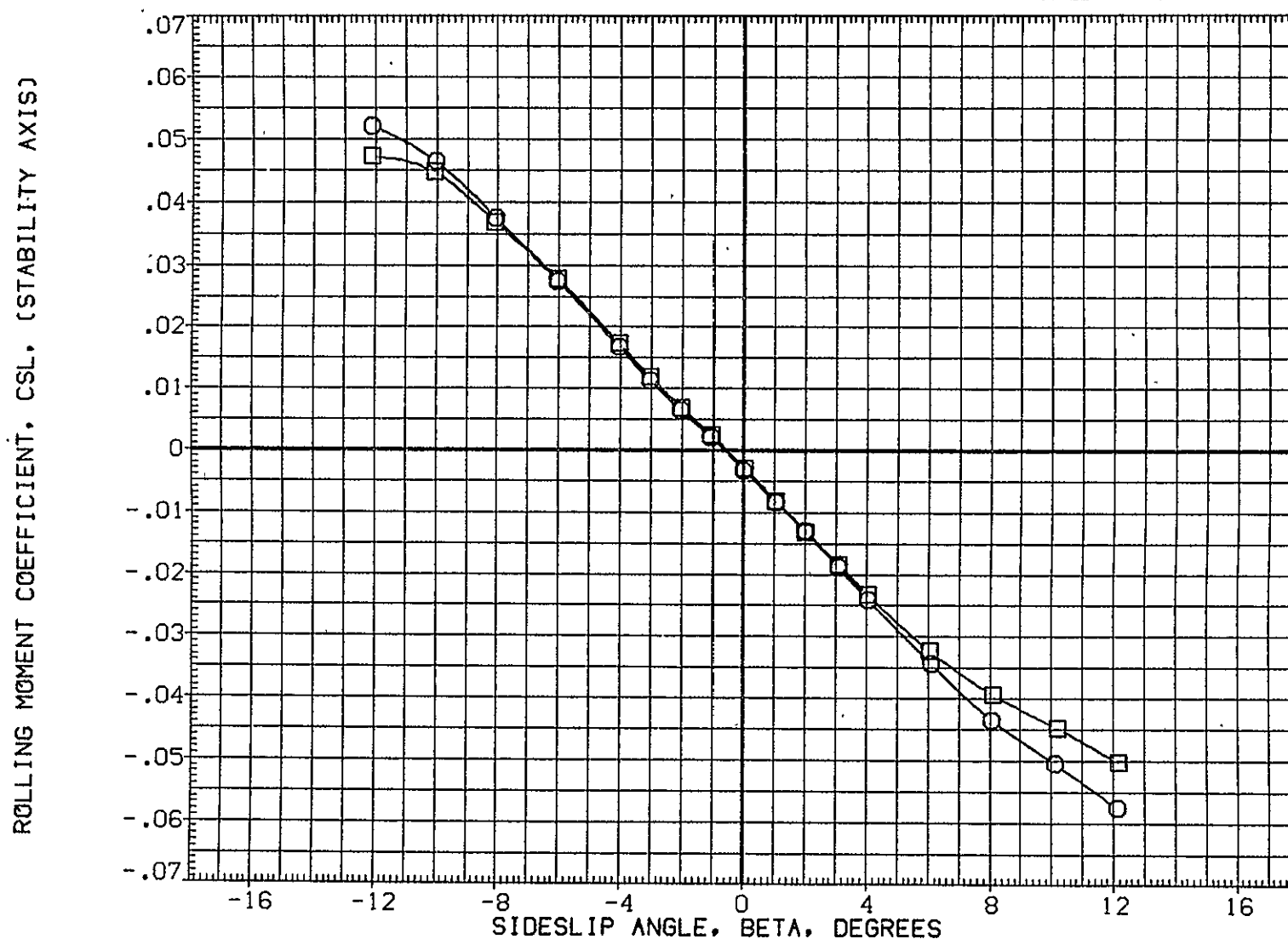


FIG.155 747+ORB(8 DEG)+TIP FINS+STD SP,FLAPS UP LNCH,ALPI=6,ORB ELEV=5 ORB

CA5 K1 FO H15.1A

(PLUS. ORB TC5 AT38.2A)(RGM101)

SYMBOL

MACH

PARAMETRIC VALUES

○

.300

ALPHA I

2.000

STAB

-1.000

□

.500

ELV-1B

.000

ELV-OB

.000

◇

.600

S1-2

.000

S3-4

45.000

△

.700

S5-6

20.000

10RB

7.850

REFERENCE INFORMATION

SREF 5500.0000 SQ.FT.

LREF 327.8000 IN.

BREF 2348.0000 IN.

XMRP 1339.9100 IN. XC

YMRP .0000 IN. YC

ZMRP 190.7500 IN. ZC

SCALE .0300

SIDE FORCE COEFFICIENT, CY

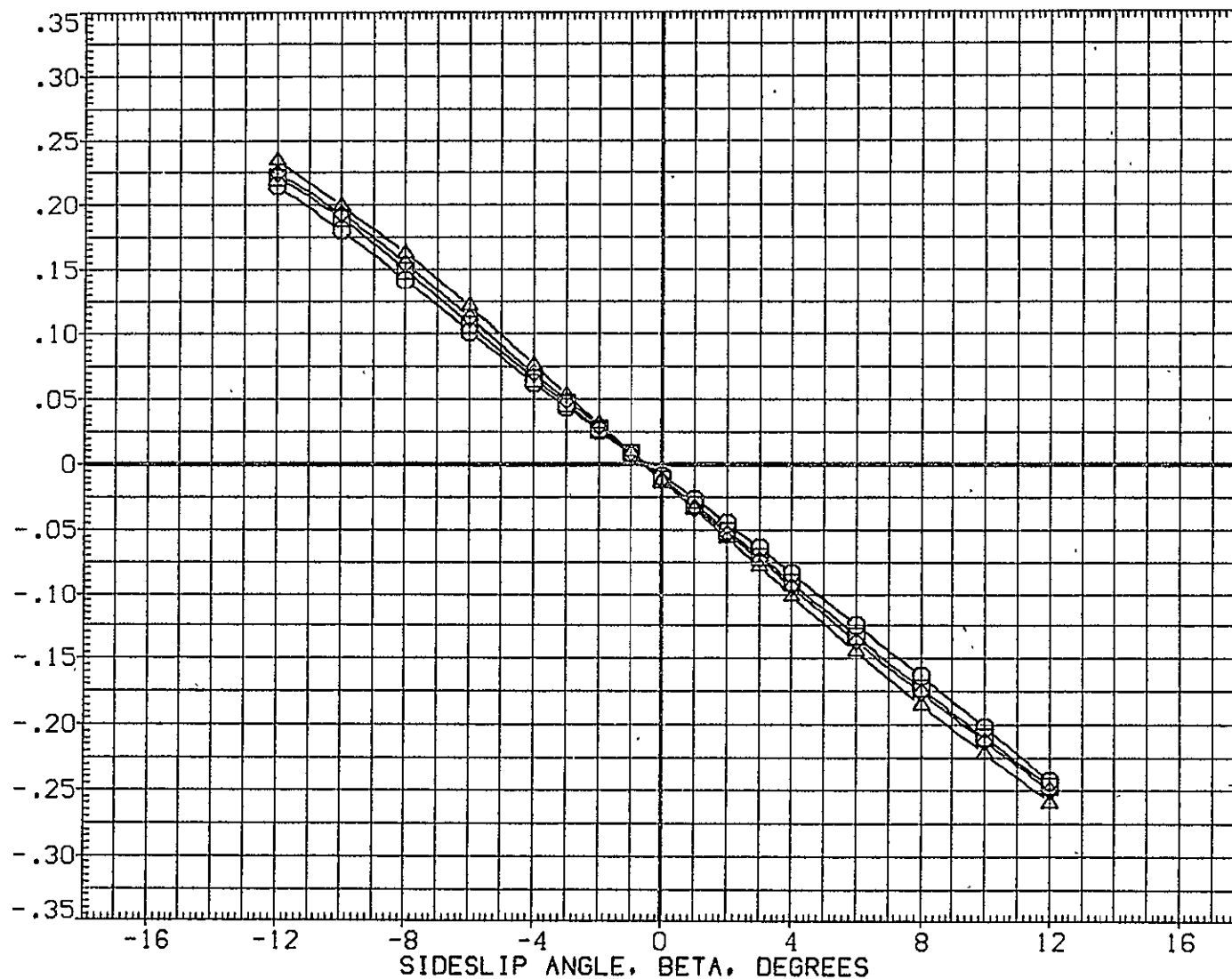


FIG.156 747+ORB(8 DEG)+STD SP,VERT TAIL OFF,FLAPS UP,ALPI=2,DE=0/0 (S=-1) TOTAL

SYMBOL	MACH	PARAMETRIC VALUES
○	.300	ALPHA1 2.000 STAB -1.000
□	.500	ELV-1B .000 ELV-0B .000
◇	.600	S1-2 .000 S3-4 45.000
△	.700	S5-6 20.000 10RB 7.850

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

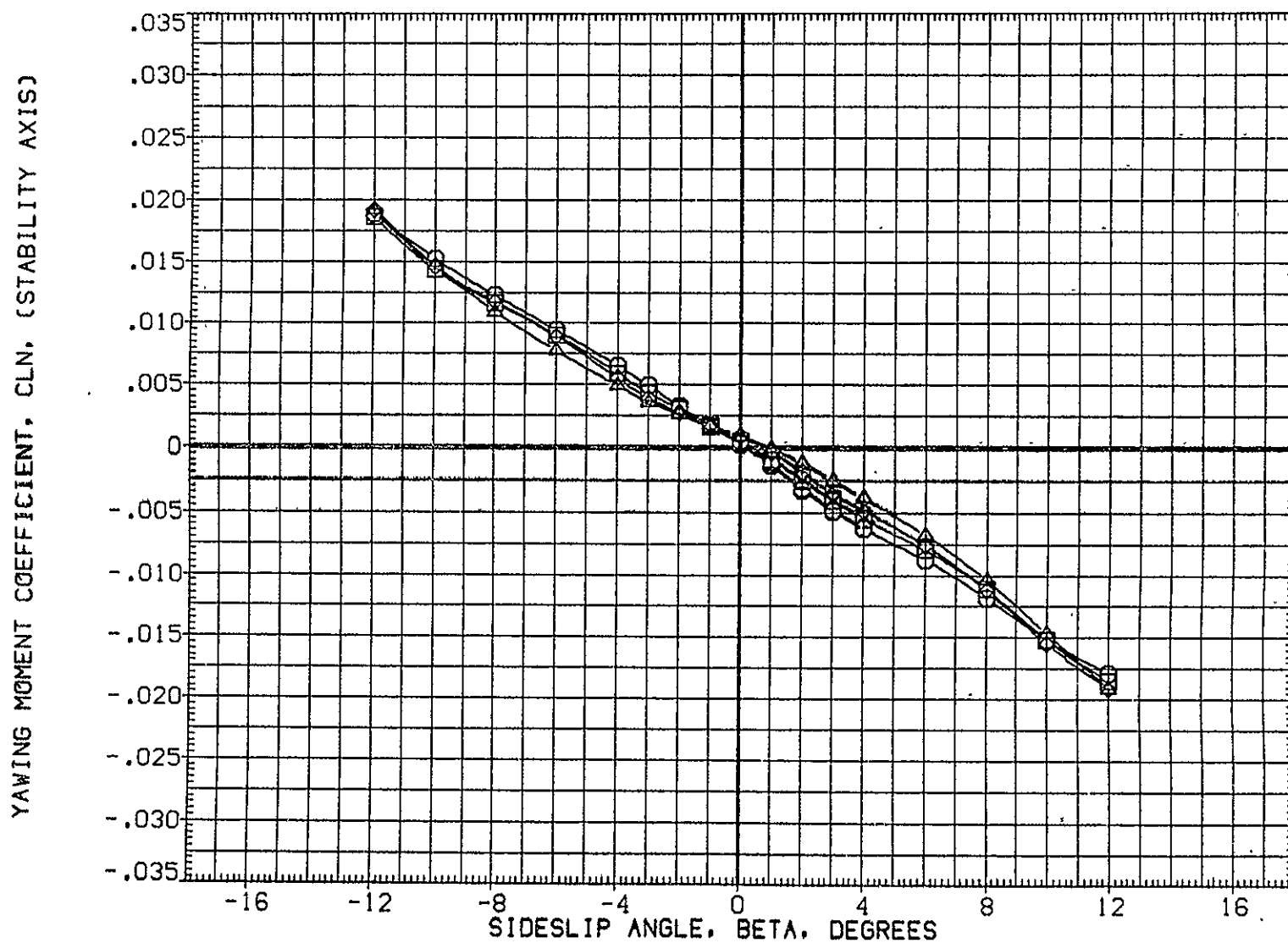


FIG.156 747+0RB(8 DEG)+STD SP,VERT TAIL OFF,FLAPS UP,ALPI=2,DE=0/0 (S=-1) TOTAL

CA5 K1 FO H15.1A

(PLUS. ORB TC5 AT38.2A)(RGM101)

SYMBOL	MACH	PARAMETRIC VALUES
○	.300	ALPHA1 2.000 STAB -1.000
□	.500	ELV-1B .000 ELV-0B .000
◇	.600	S1-2 .000 S3-4 45.000
△	.700	S5-6 20.000 10RB 7.850

REFERENCE INFORMATION	
SREF	5500.0000 SQ.FT.
LREF	327.8000 IN.
BREF	2348.0000 IN.
XMRP	1339.9100 IN. XC
YMRP	.0000 IN. YC
ZMRP	190.7500 IN. ZC
SCALE	.0300

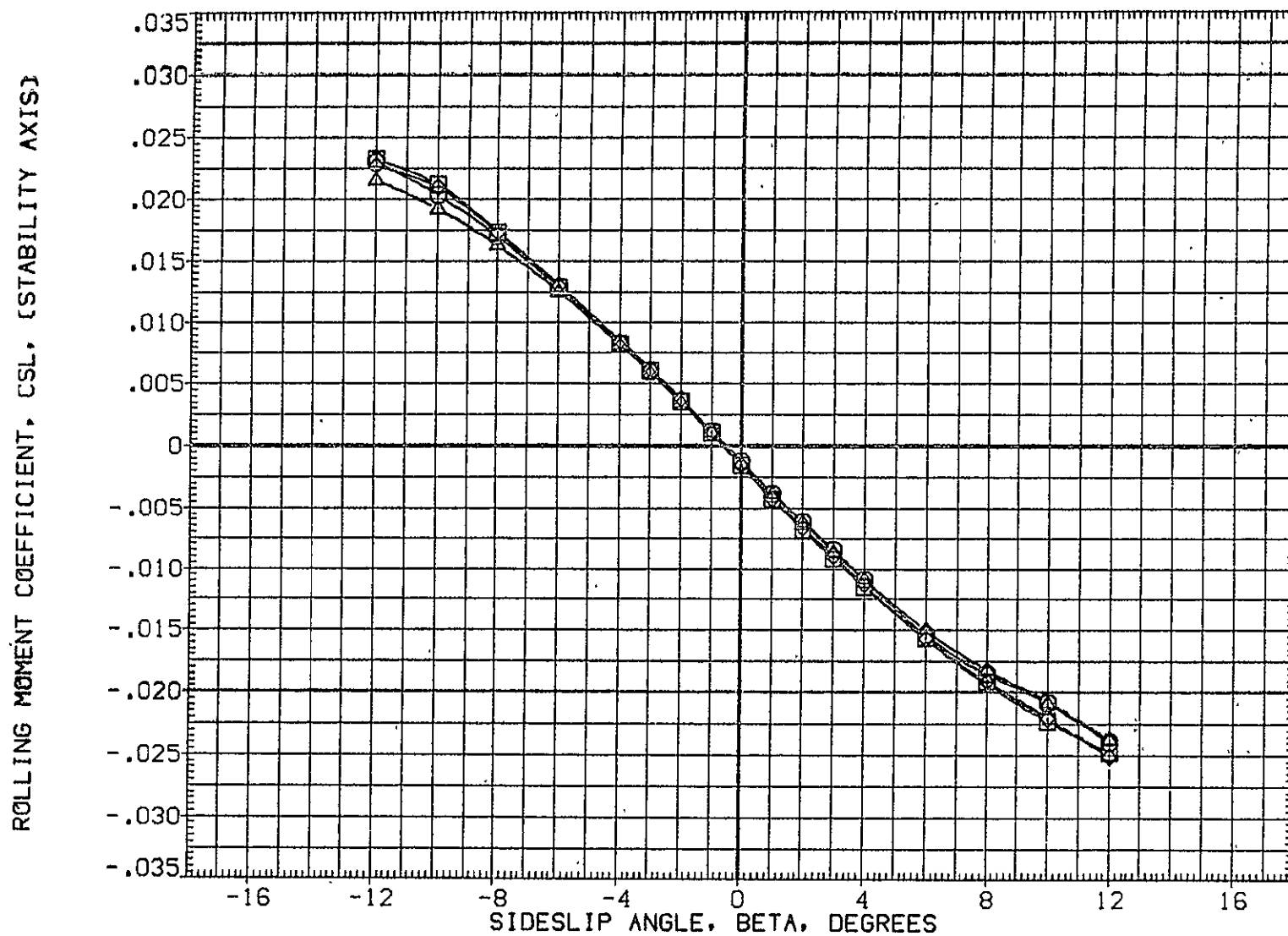


FIG.156 747+ORB(8 DEG)+STD SP,VERT TAIL OFF,FLAPS UP,ALPI=2,DE=0/0 (S=-1) TOTAL

SYMBOL	MACH	PARAMETRIC VALUES
○	.300	ALPHA1 2.000 STAB -1.000
□	.500	ELV-1B .000 ELV-0B .000
◇	.600	S1-2 .000 S3-4 45.000
△	.700	S5-6 20.000 10RB 7.850

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT..
LREF	327.8000	IN.
BREF	2348.0000	IN.
XM RP	1339.9100	IN. XC
YM RP	.0000	IN. YC
ZM RP	190.7500	IN. ZC
SCALE	.0300	

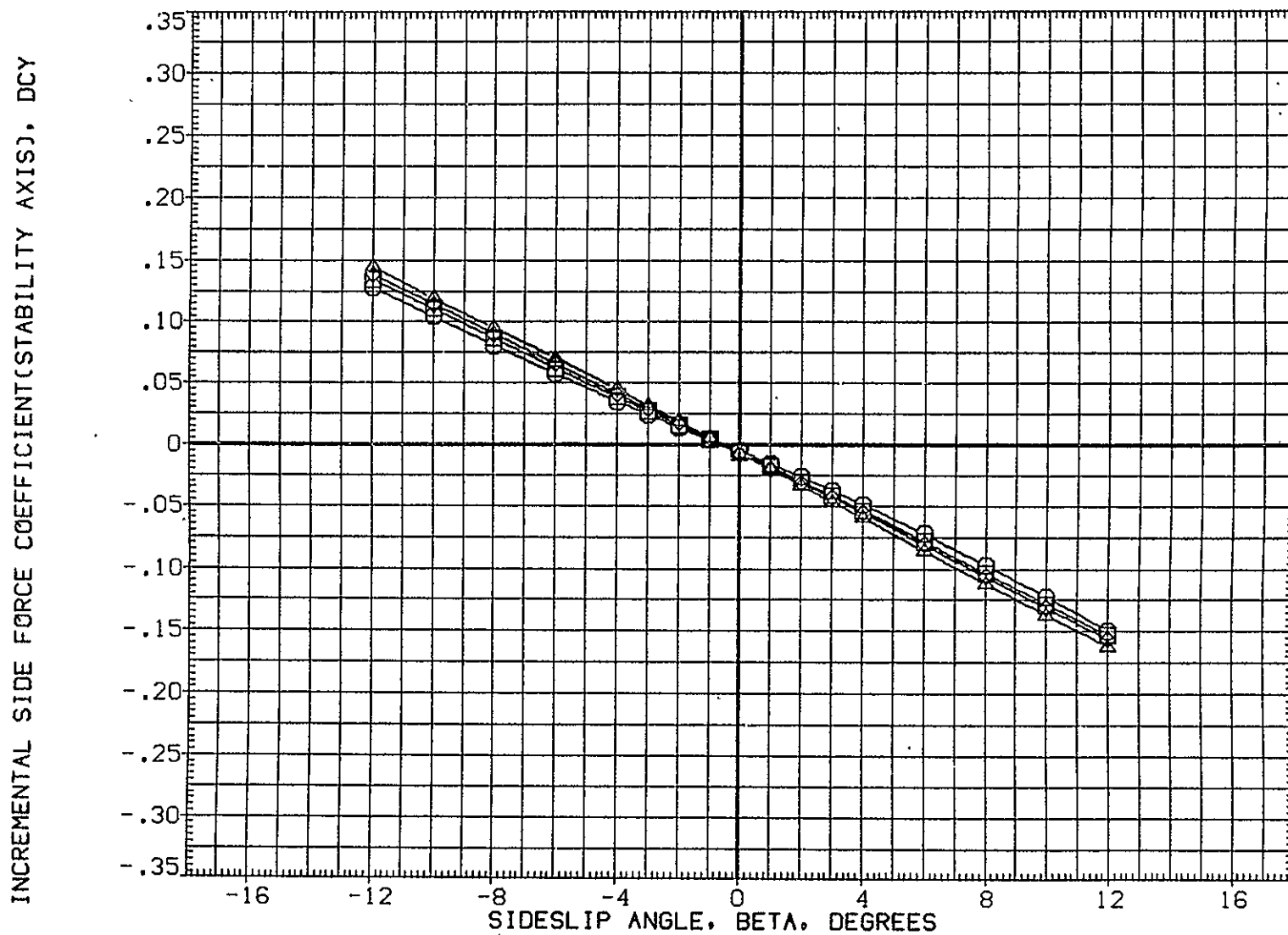


FIG.157 747+ORB(8 DEG)+STD SP,VERT TAIL OFF,FLAPS UP,ALPI=2,DE=0/0 (S=-1) 747

CA5 K1 F0 H15.1A

MINUS 0RB TC5

(BGM101)

SYMBOL	MACH	PARAMETRIC VALUES
○	.300	ALPHA1 2.000 STAB -1.000
□	.500	ELV-1B .000 ELV-0B .000
◇	.600	S1-2 .000 S3-4 45.000
△	.700	S5-6 20.000 10RB 7.850

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

INCREMENTAL YAWING MOMENT COEFFICIENT(STABILITY AXIS), DCLN

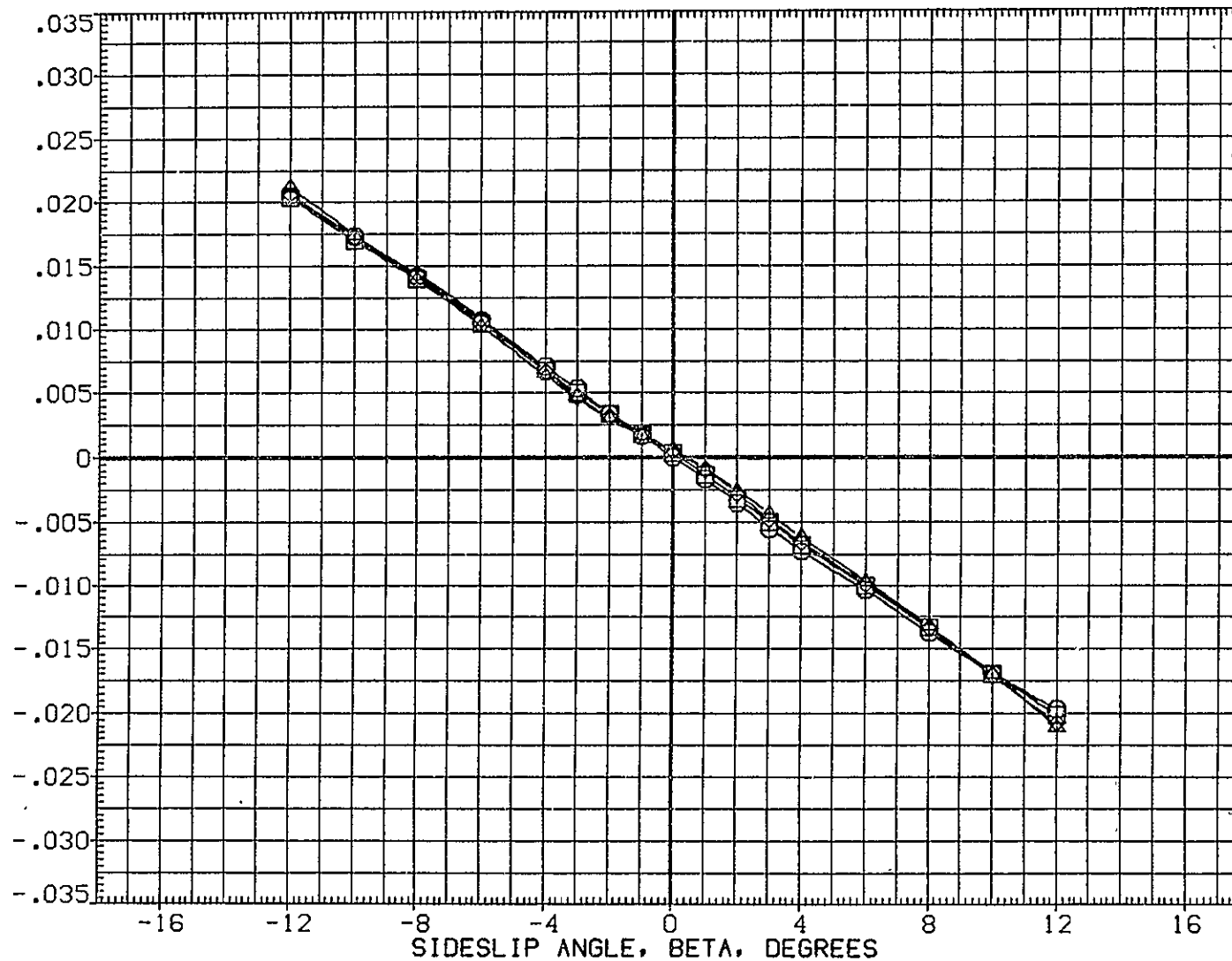


FIG.157 747+0RB(8 DEG)+STD SP,VERT TAIL OFF,FLAPS UP,ALPI=2,DE=0/0 (S=-1) 747

SYMBOL	MACH	PARAMETRIC VALUES
○	.300	ALPHA1 2.000 STAB -1.000
□	.500	ELV-1B .000 ELV-0B .000
◇	.600	S1-2 .000 S3-4 45.000
△	.700	S5-6 20.000 10RB 7.850

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

INCREMENTAL ROLLING MOMENT COEFFICIENT (STABILITY AXIS), DCSL

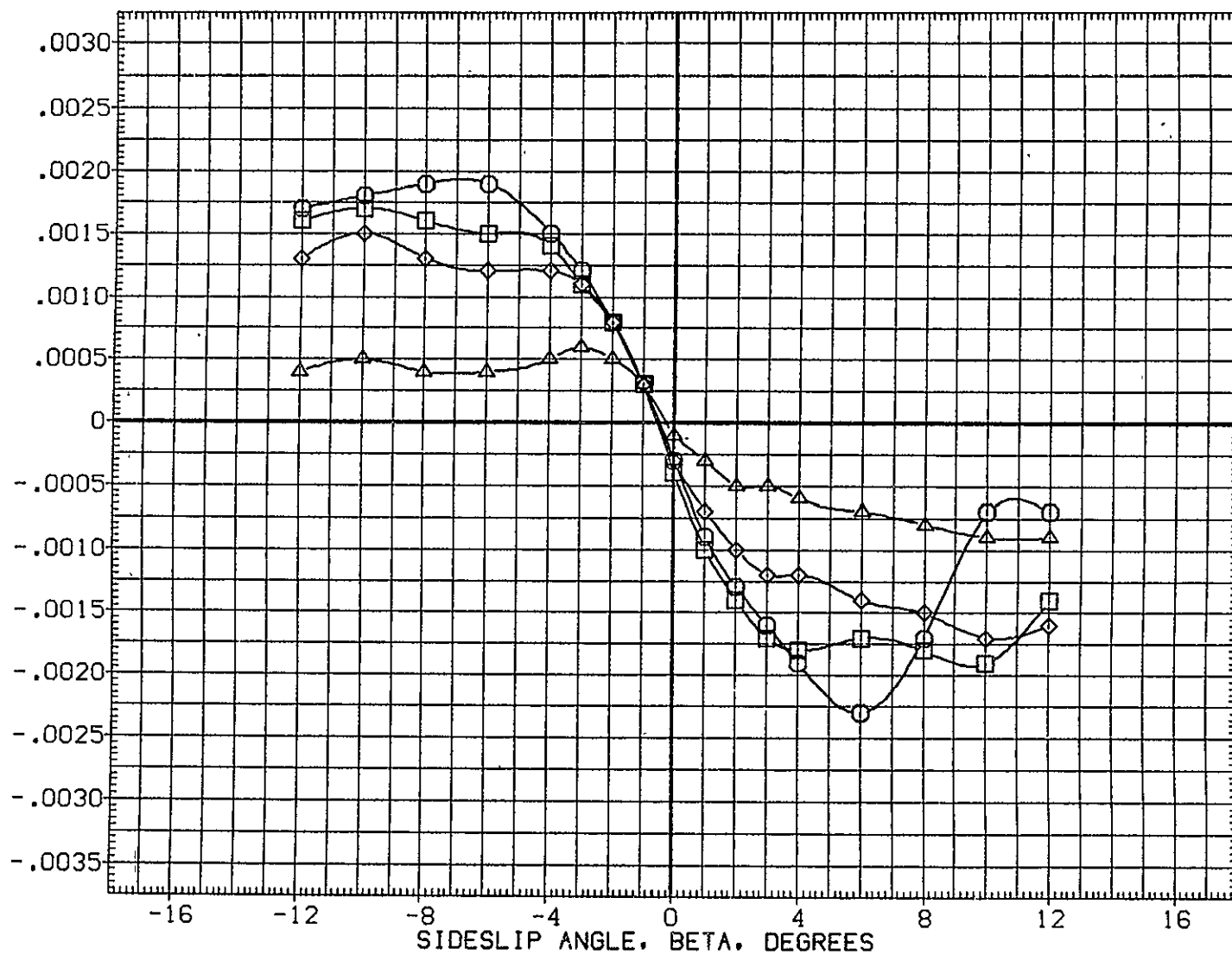


FIG.157 747+0RB(8 DEG)+STD SP, VERT TAIL OFF, FLAPS UP, ALPI=2, DE=0/0 (S=-1) 747

CA5 ORB TC5 AT38.2A (PRES. K1 FO H15.1A

(XGM101)

SYMBOL	MACH	PARAMETRIC VALUES			
○	.299	ALPHA1	2.000	STAB	-1.000
□	.500	ELV-1B	.000	ELV-0B	.000
◇	.600	S1-2	.000	S3-4	45.000
△	.700	S5-6	20.000	10RB	7.850

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN. X0
YMRP	.0000	IN. Y0
ZMRP	375.0000	IN. Z0
SCALE	.0300	

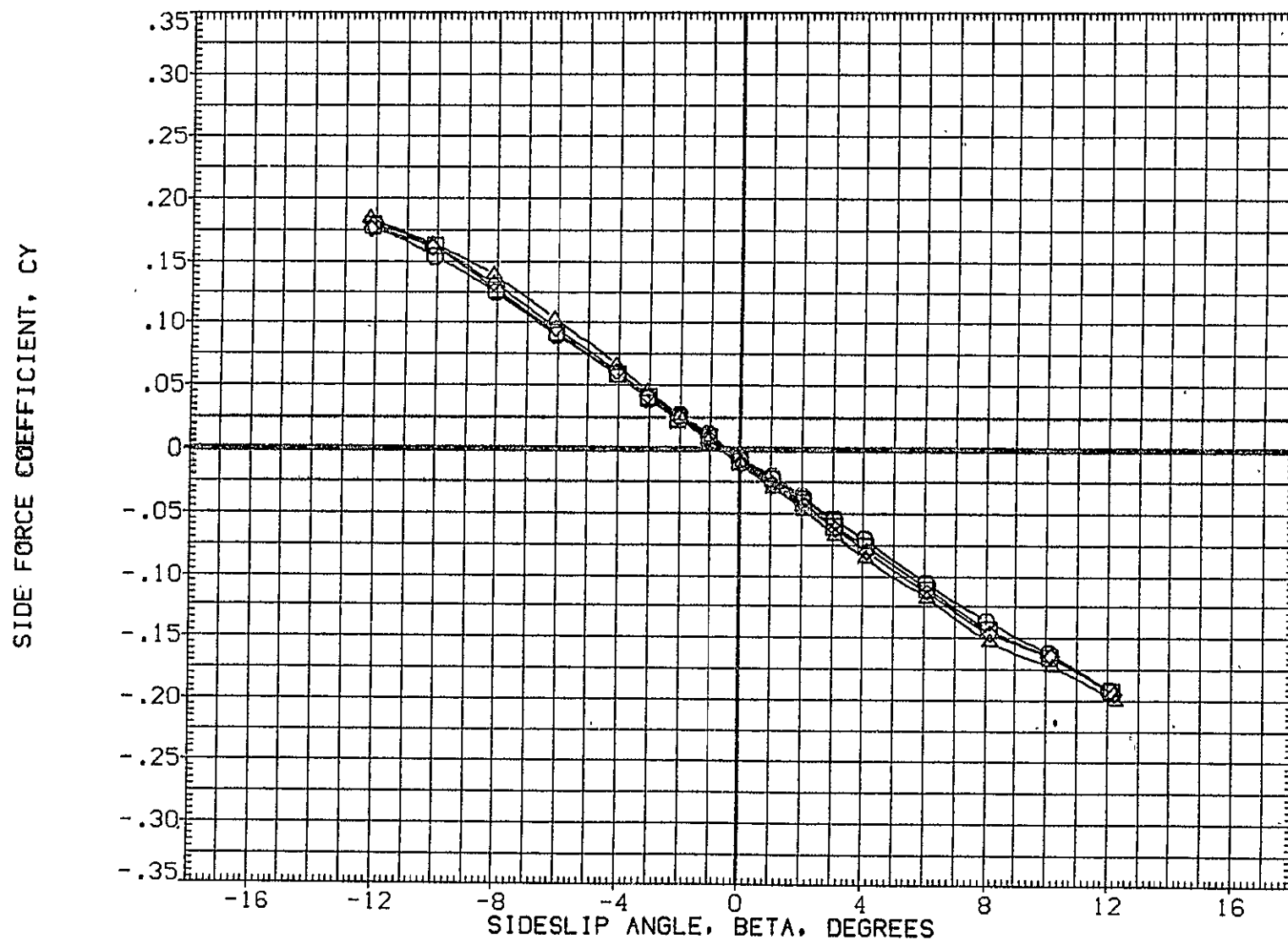


FIG.158 747+ORB(8 DEG)+STD SP,VERT TAIL OFF,FLAPS UP,ALPI=2,DE=0/0 (S=-1) ORB

SYMBOL	MACH	PARAMETRIC VALUES
○	.299	ALPHA1 2.000 STAB -1.000
□	.500	ELV-1B .000 ELV-0B .000
◇	.600	S1-2 .000 S3-4 45.000
△	.700	S5-6 20.000 10RB 7.850

REFERENCE INFORMATION	
SREF	2690.0000 SQ.FT.
LREF	474.8100 IN.
BREF	936.6800 IN.
XMRP	1109.0000 IN. X0
YMRP	.0000 IN. Y0
ZMRP	375.0000 IN. Z0
SCALE	.0300

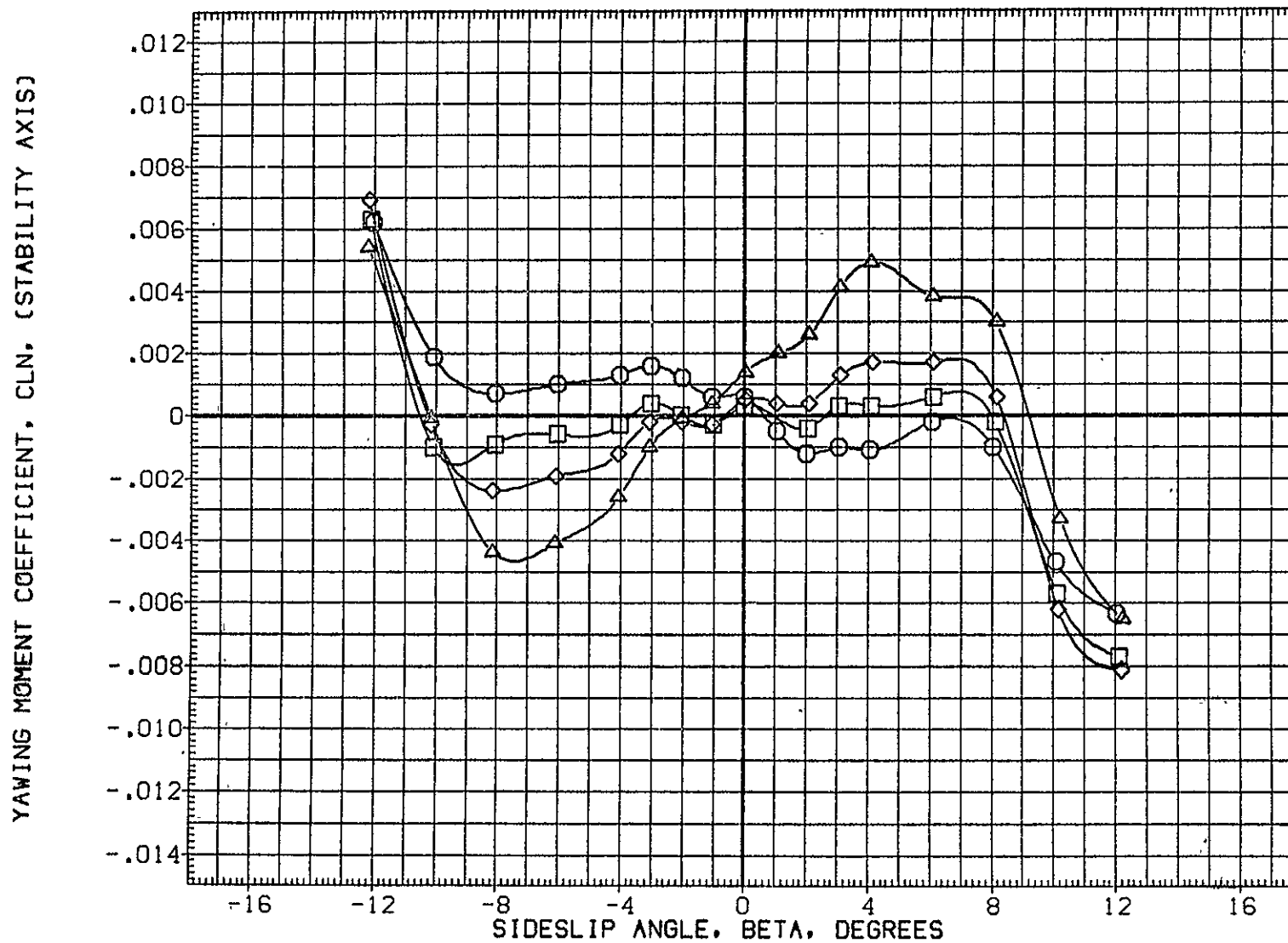


FIG.158 747+ORB(8 DEG)+STD SP,VERT TAIL OFF,FLAPS UP,ALPI=2,DE=0/0 (S=-1) ORB

CA5 ORB TC5 AT38.2A (PRES. K1 FO H15.1A

(XGM101)

SYMBOL

○
□
◇
△

MACH

.299
.500
.600
.700

ALPHA1
ELV-1B
S1-2
S5-6

PARAMETRIC VALUES

2.000 STAB -1.000
.000 ELV-0B .000
.000 S3-4 45.000
20.000 10RB 7.850

REFERENCE INFORMATION

SREF 2690.0000 SQ.FT.
LREF 474.8100 IN.
BREF 936.6800 IN.
XMRP 1109.0000 IN. X0
YMRP .0000 IN. Y0
ZMRP 375.0000 IN. Z0
SCALE .0300

ROLLING MOMENT COEFFICIENT, CSL, (STABILITY AXIS)

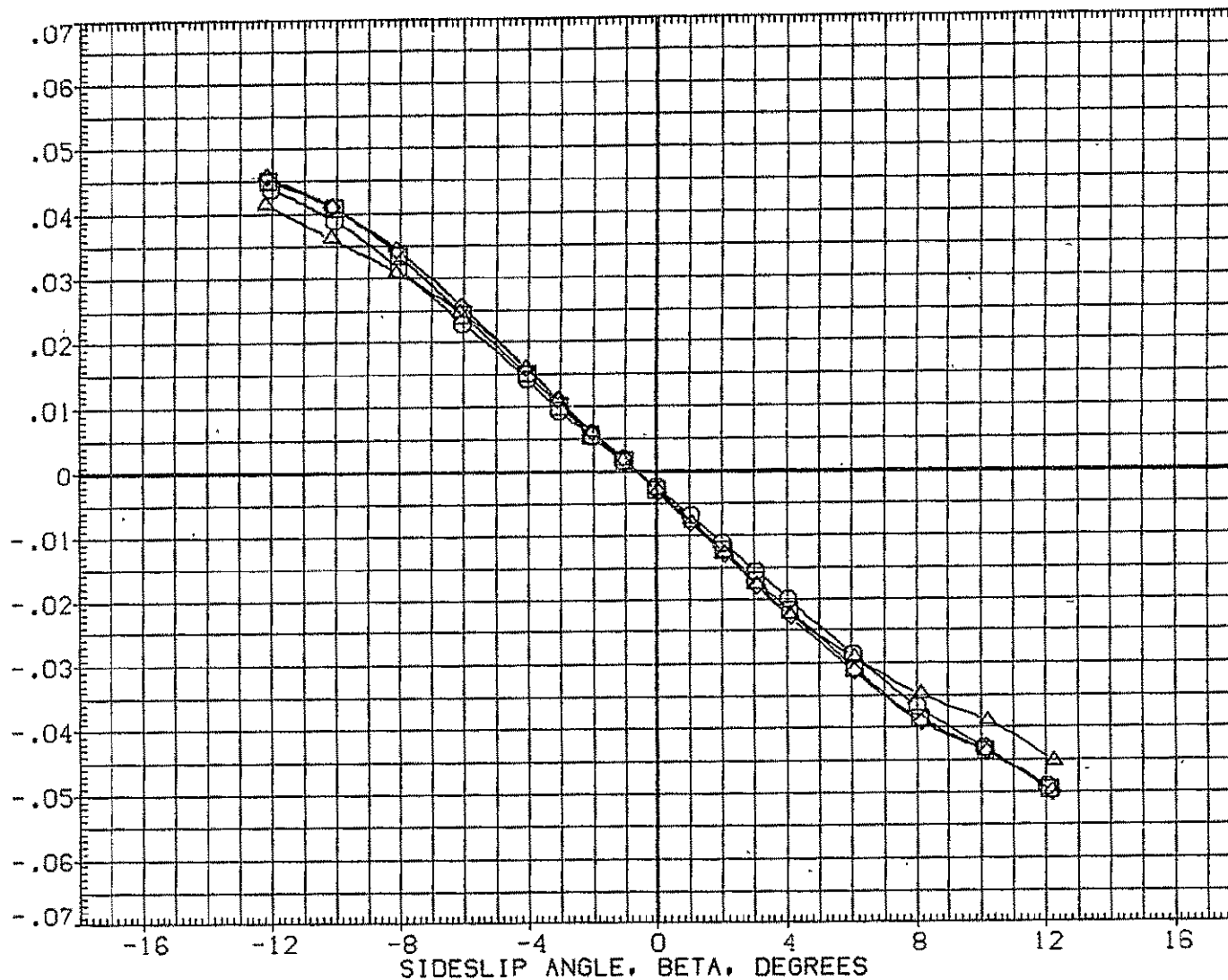


FIG.158 747+ORB(8 DEG)+STD SP,VERT TAIL OFF,FLAPS UP,ALPI=2,DE=0/0 (S=-1) ORB

SYMBOL

MACH

PARAMETRIC VALUES

REFERENCE INFORMATION

○
□
◇
△
▽.150
.300
.500
.600
.700ALPHA1
ELV-1B
S1-2
S5-66.000
.000
.000
20.000STAB
ELV-0B
S3-4
10RB-1.000
.000
45.000
7.850SREF
LREF
BREF
XMRP
YMRP
ZMRP
SCALE5500.0000
327.8000
2348.0000
1339.9100
.0000
190.7500
.0300SQ.FT.
IN.
IN.
IN. XC
IN. YC
IN. ZC

SIDE FORCE COEFFICIENT, CY

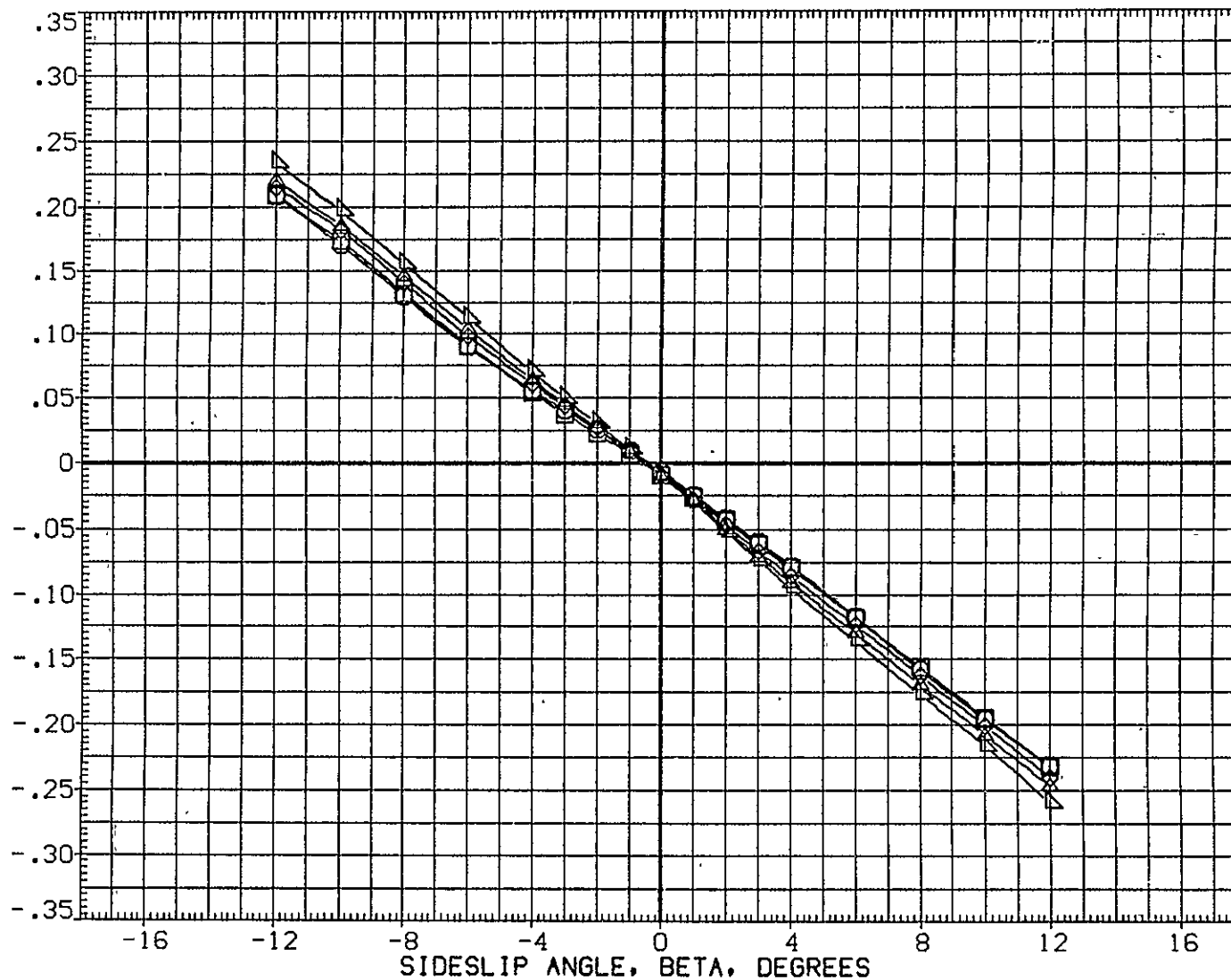


FIG.159 747+0RB(8 DEG)+STD SP,VERT TAIL OFF,FLAPS UP,ALPI=6,DE=0/0 (S=-1) TOTAL

CA5 K1 F0 H15.1A

(PLUS. 0RB TC5 AT38.2A)(RGM102)

SYMBOL

MACH

PARAMETRIC VALUES

REFERENCE INFORMATION

○
□
◇
△
▽

.150
.300
.500
.600
.700

ALPHA1
ELV-1B
S1-2
S5-6

6.000
.000
.000
20.000

STAB
ELV-0B
S3-4
10RB

-1.000
.000
45.000
7.850

SREF 5500.0000 SQ. FT.
LREF 327.8000 IN.
BREF 2348.0000 IN.
XMRP 1339.9100 IN. XC
YMRP .0000 IN. YC
ZMRP 190.7500 IN. ZC
SCALE .0300

YAWING MOMENT COEFFICIENT, CLN, (STABILITY AXIS)

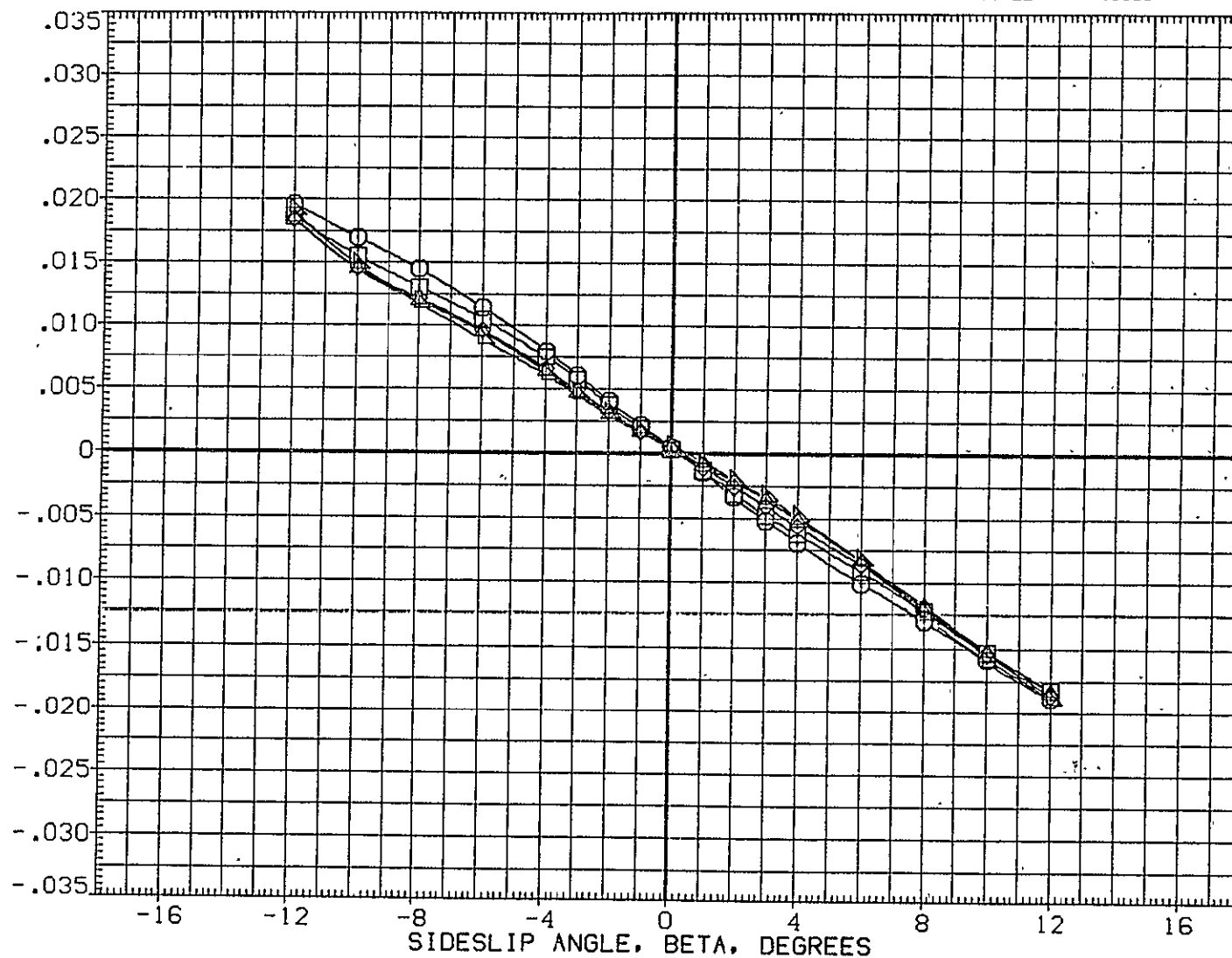


FIG.159 747+0RB(8 DEG)+STD SP,VERT TAIL OFF,FLAPS UP,ALPI=6,DE=0/0 (S=-1) TOTAL

SYMBOL	MACH	PARAMETRIC VALUES
○	.150	ALPHA1 6.000 STAB -1.000
□	.300	ELV-1B .000 ELV-0B .000
◇	.500	S1-2 .000 S3-4 45.000
△	.600	S5-6 20.000 10RB 7.850
▽	.700	

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

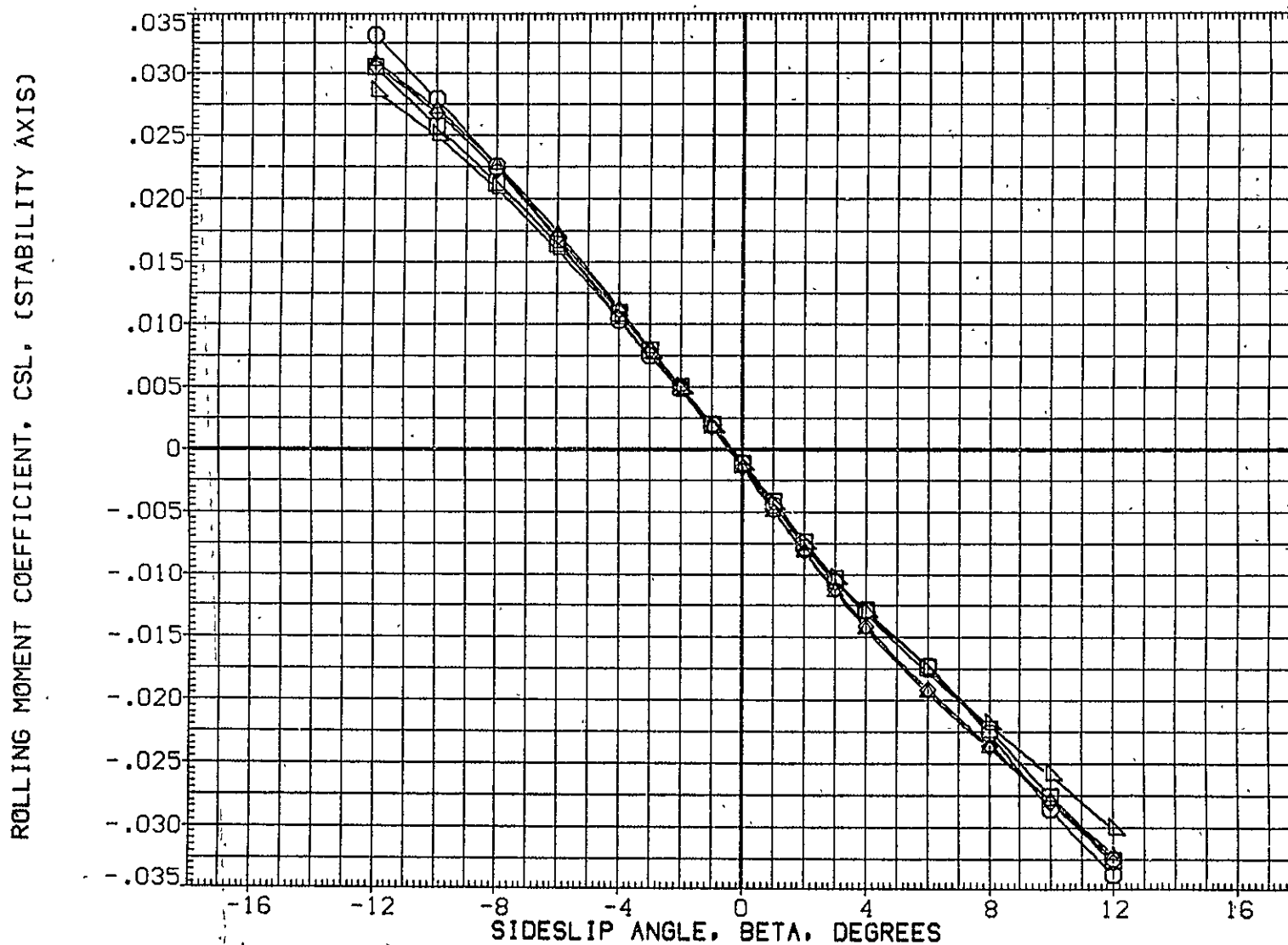


FIG.159 747+ORB(8 DEG)+STD SP,VERT TAIL OFF,FLAPS UP,ALP1=6,DE=0/0 (S=-1) TOTAL

CA5 K1 F0 H15.1A

MINUS 0RB TC5

(BGM102)

SYMBOL

MACH

PARAMETRIC VALUES

○
□
◇
△
▽

.150
.300
.500
.600
.700

ALPHA1
ELV-1B
S1-2
S5-6

6.000
.000
.000
20.000

STAB
ELV-0B
S3-4
10RB

-1.000
.000
45.000
7.850

REFERENCE INFORMATION

SREF	5500.0000	SQ.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

INCREMENTAL SIDE FORCE COEFFICIENT(STABILITY AXIS), DCY

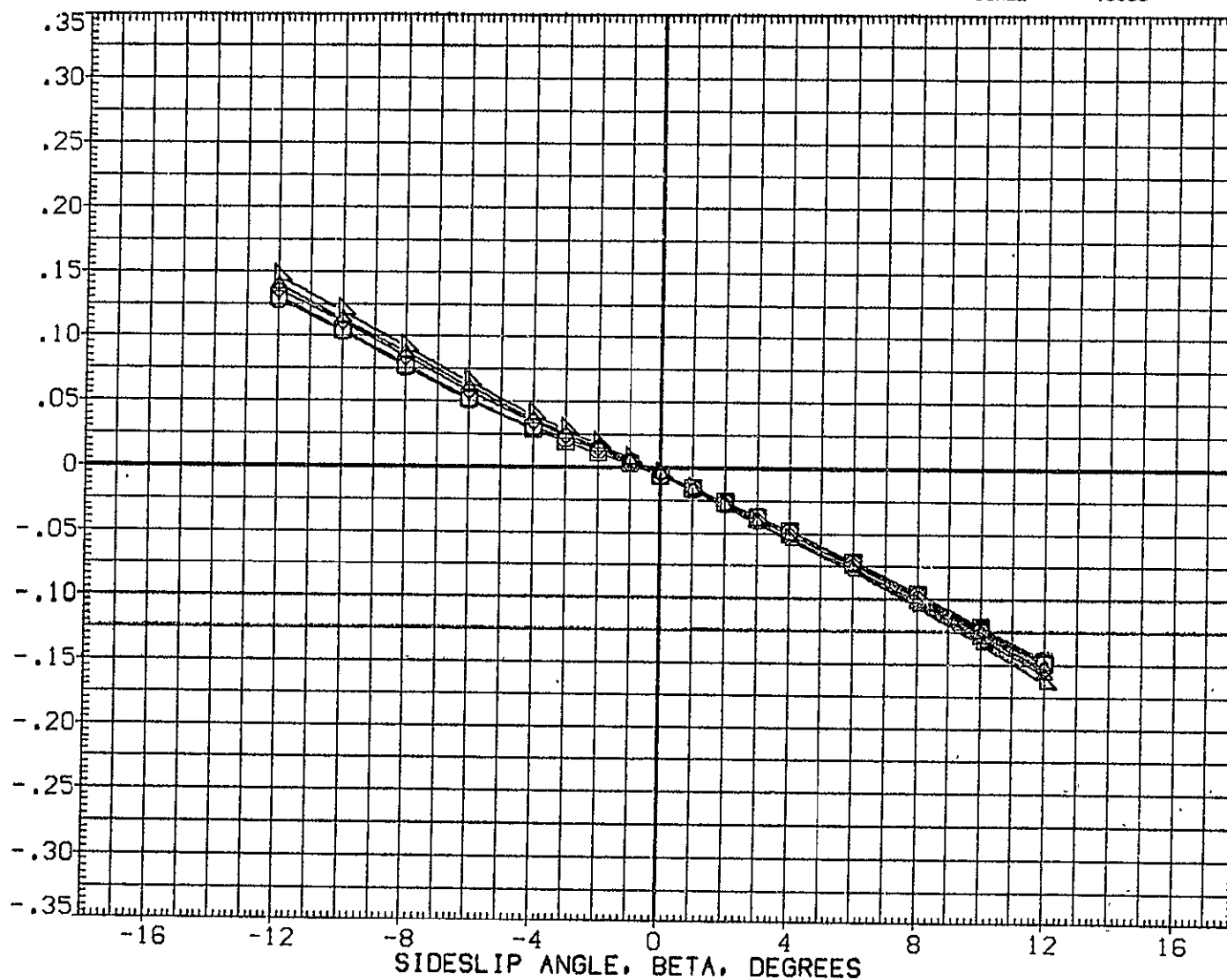


FIG. 160 747+0RB(8 DEG)+STD SP, VERT TAIL OFF, FLAPS UP, ALPI=6, DE=0/0 (S=-1) 747

SYMBOL	MACH	PARAMETRIC VALUES
○	.150	ALPHA1 8.000 STAB -1.000
□	.300	ELV-1B .000 ELV-0B .000
◇	.500	S1-2 .000 S3-4 45.000
△	.600	S5-6 20.000 10RB 7.850
▽	.700	

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

INCREMENTAL YAWING MOMENT COEFFICIENT (STABILITY AXIS), DCLN

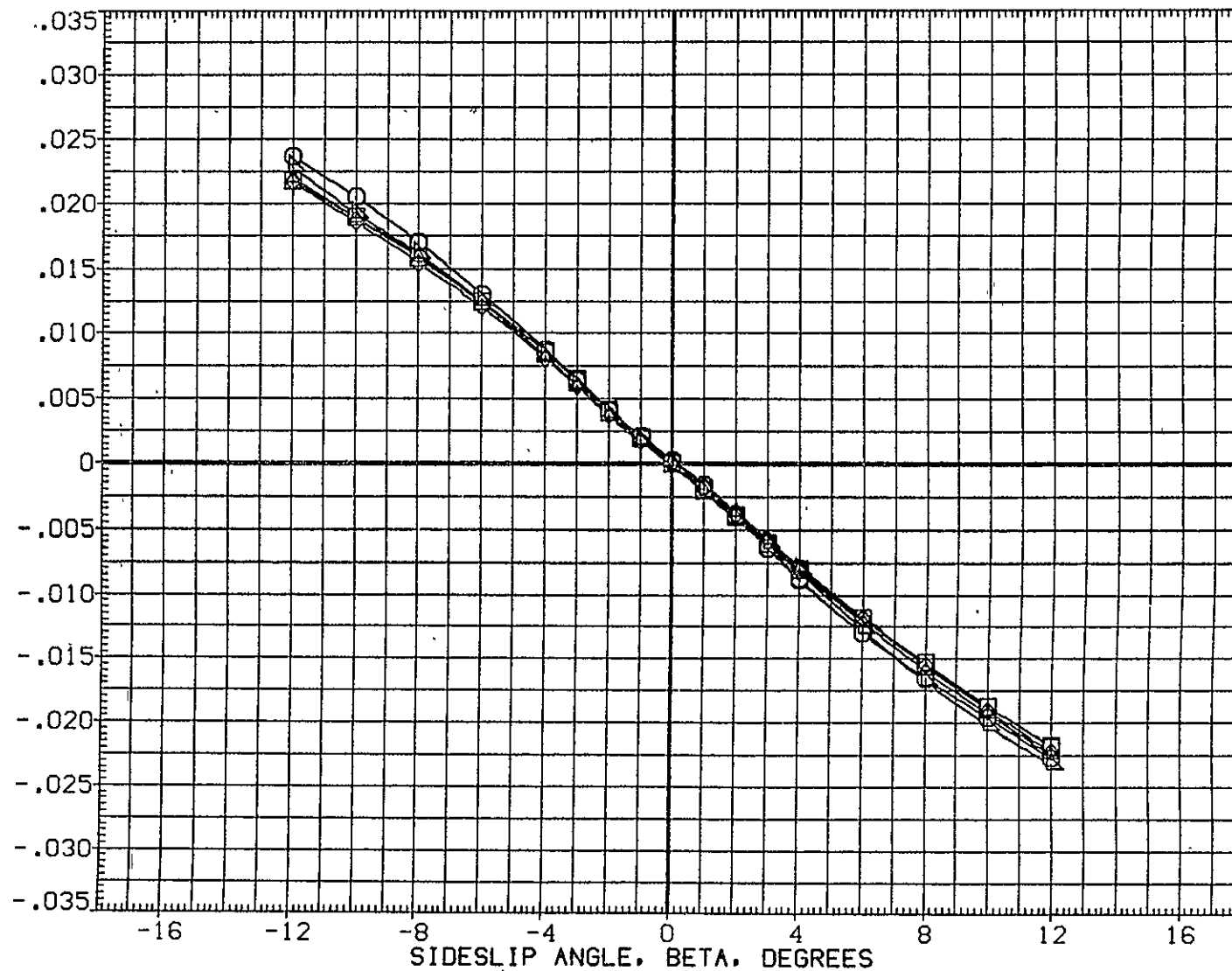


FIG.160 747+ORB(8 DEG)+STD SP,VERT TAIL OFF,FLAPS UP,ALPI=6,DE=0/0 (S=-1) 747

CA5 K1 FO H15.1A

MINUS ORB TC5

(BGM102)

SYMBOL
○
□
◇
△
▽MACH
.150
.300
.500
.600
.700ALPHA
ALPHA1
ELV-1B
SI-2
SS-6

PARAMETRIC VALUES

6.000 STAB
.000 ELV-08
.000 S3-4
20.000 10RB-1.000
.000
45.000
7.850

REFERENCE INFORMATION

SREF	5500.0000	SQ.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

INCREMENTAL ROLLING MOMENT COEFFICIENT(STABILITY AXIS), DCSL

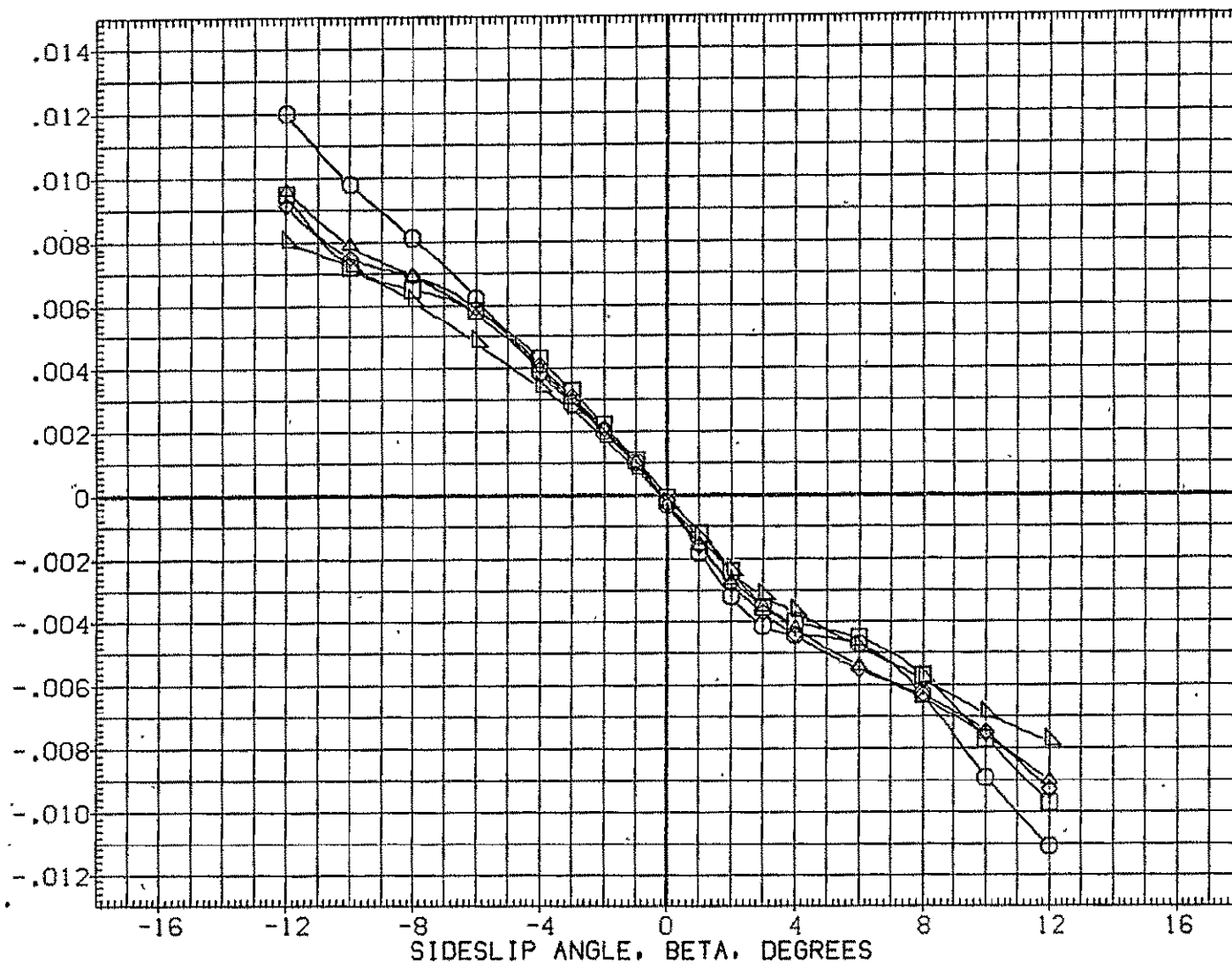


FIG.160 747+0RB(8 DEG)+STD SP,VERT TAIL OFF,FLAPS UP,ALPI=6,DE=0/0 (S=-1) 747

SYMBOL	MACH	PARAMETRIC VALUES	REFERENCE INFORMATION
○	.151	ALPHA1 6.000 STAB -1.000	SREF 2690.0000 SQ.FT.
□	.300	ELV-18 .000 ELV-08 .000	LREF 474.8100 IN.
◇	.500	S1-2 .000 S3-4 45.000	BREF 936.6800 IN.
△	.600	S5-6 20.000 10RB 7.850	XMRP 1109.0000 IN. X0
▽	.700		YMRP .0000 IN. Y0
			ZMRP 375.0000 IN. Z0
			SCALE .0300

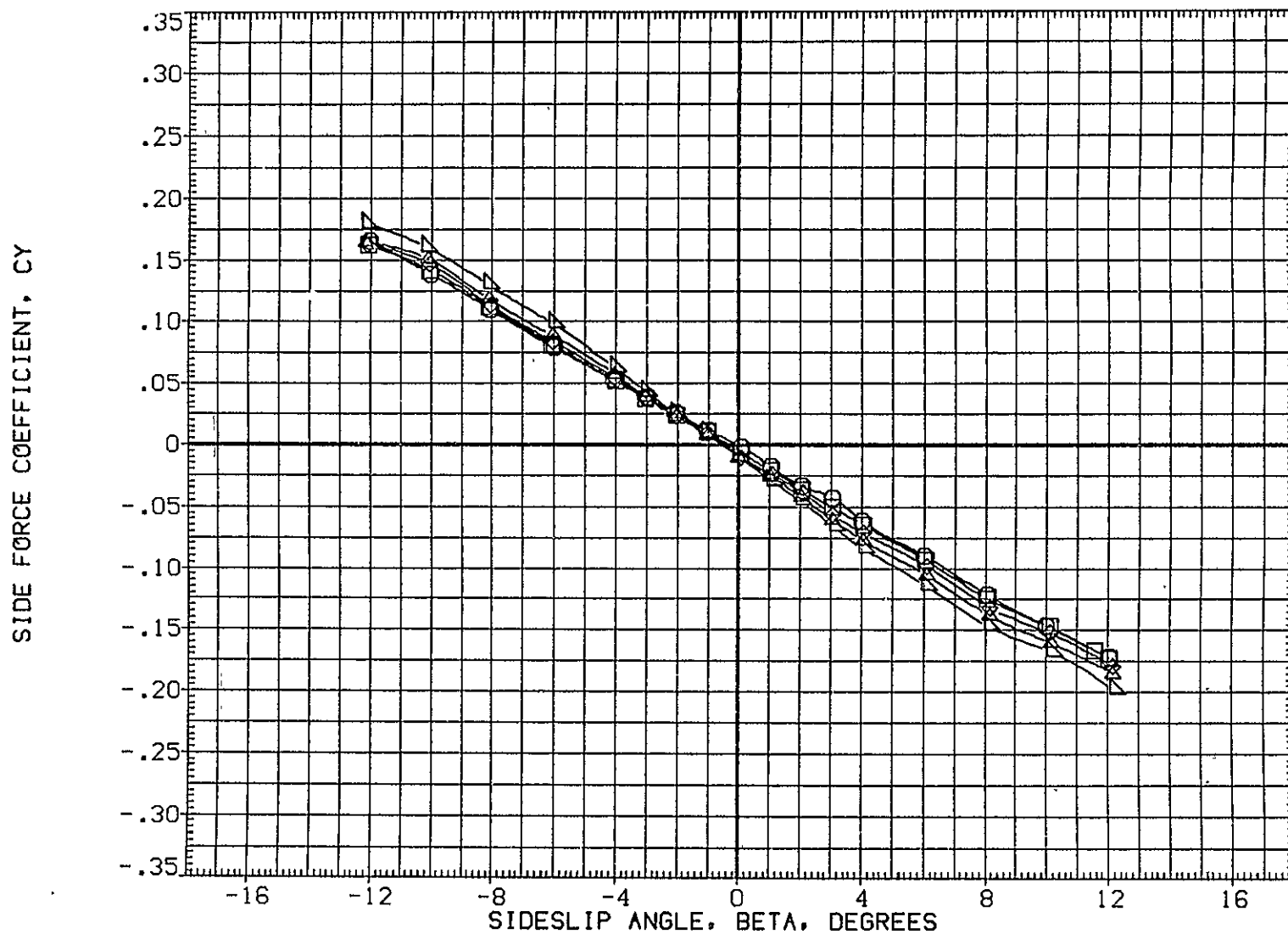


FIG.161 747+0RB(8 DEG)+STD SP,VERT TAIL OFF,FLAPS UP,ALPI=6,DE=0/0 (S=-1) 0RB

CA5 ORB TC5 AT38.2A' (PRES..K1 FO H15.1A

(XGM102)

SYMBOL	MACH	PARAMETRIC VALUES	REFERENCE INFORMATION
○	.151	ALPHA1 6.000 STAB -1.000	SREF 2690.0000 SQ.FT.
□	.300	ELV-1B .000 ELV-08 .000	LREF 474.8100 IN.
◇	.500	SI-2 .000 S3-4 45.000	BREF 936.6800 IN.
△	.600	SS-6 20.000 10RB 7.850	XMRP 1109.0000 IN. X0
▽	.700		YMRP .0000 IN. Y0
			ZMRP 375.0000 IN. Z0
			SCALE .0300

YAWING MOMENT COEFFICIENT, CLN, (STABILITY AXIS)

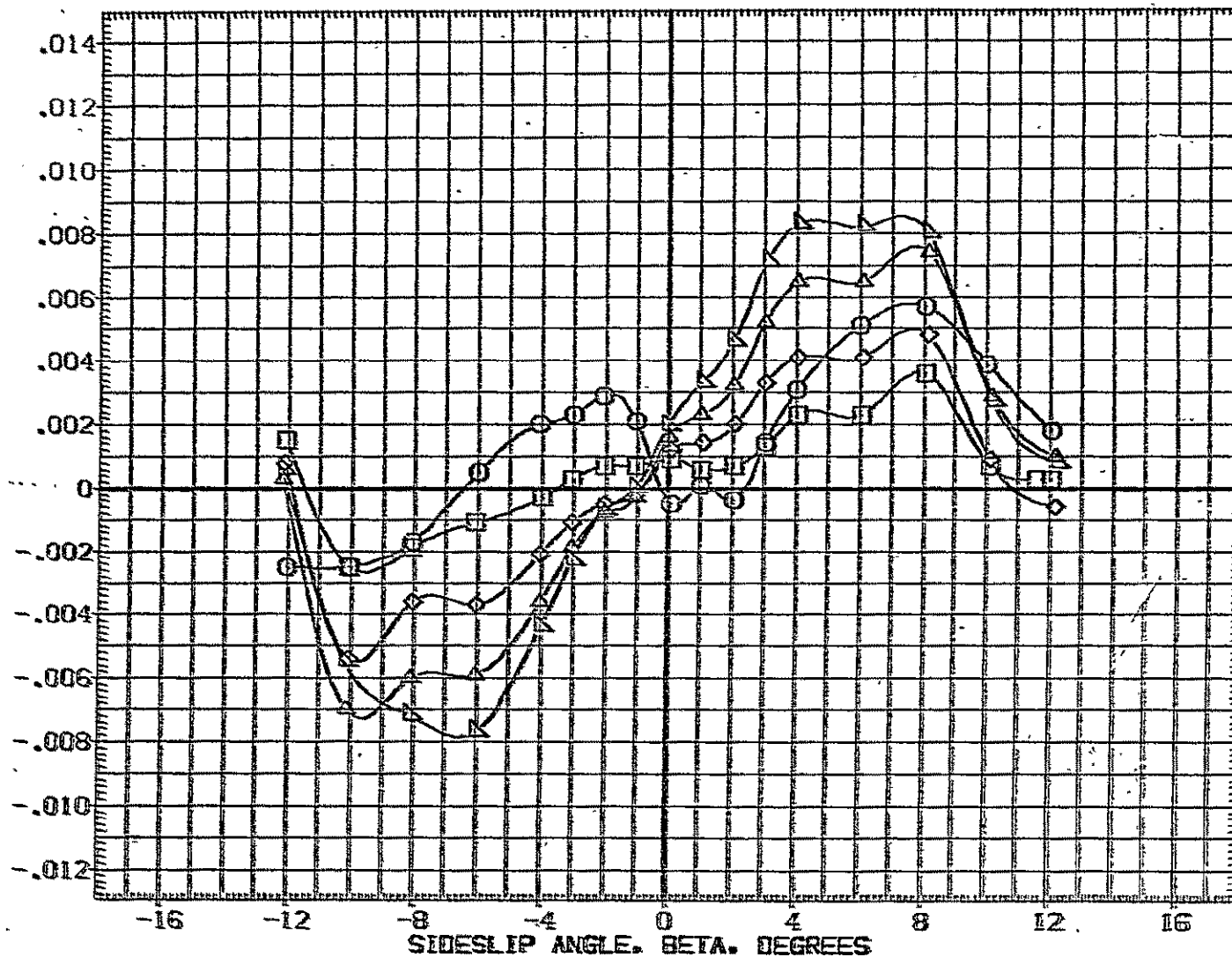


FIG.161 747+ORB(8 DEG)+STD SP.VERT TAIL OFF,FLAPS UP,ALPI=6,DE=0/0 (S=-1) ORB

SYMBOL

MACH

PARAMETRIC VALUES

○
□
◇
△
▽

.151
.300
.500
.600
.700

ALPHA1
ELV-1B
S1-2
S5-6

6.000
.000
.000
20.000

STAB
ELV-0B
S3-4
10RB

-1.000
.000
45.000
7.850

REFERENCE INFORMATION

SREF 2690.0000 SQ.FT.
LREF 474.8100 IN.
BREF 936.6800 IN.
XMRP 1109.0000 IN. X0
YMRP .0000 IN. Y0
ZMRP 375.0000 IN. Z0
SCALE .0300

ROLLING MOMENT COEFFICIENT, CSL. (STABILITY AXIS)

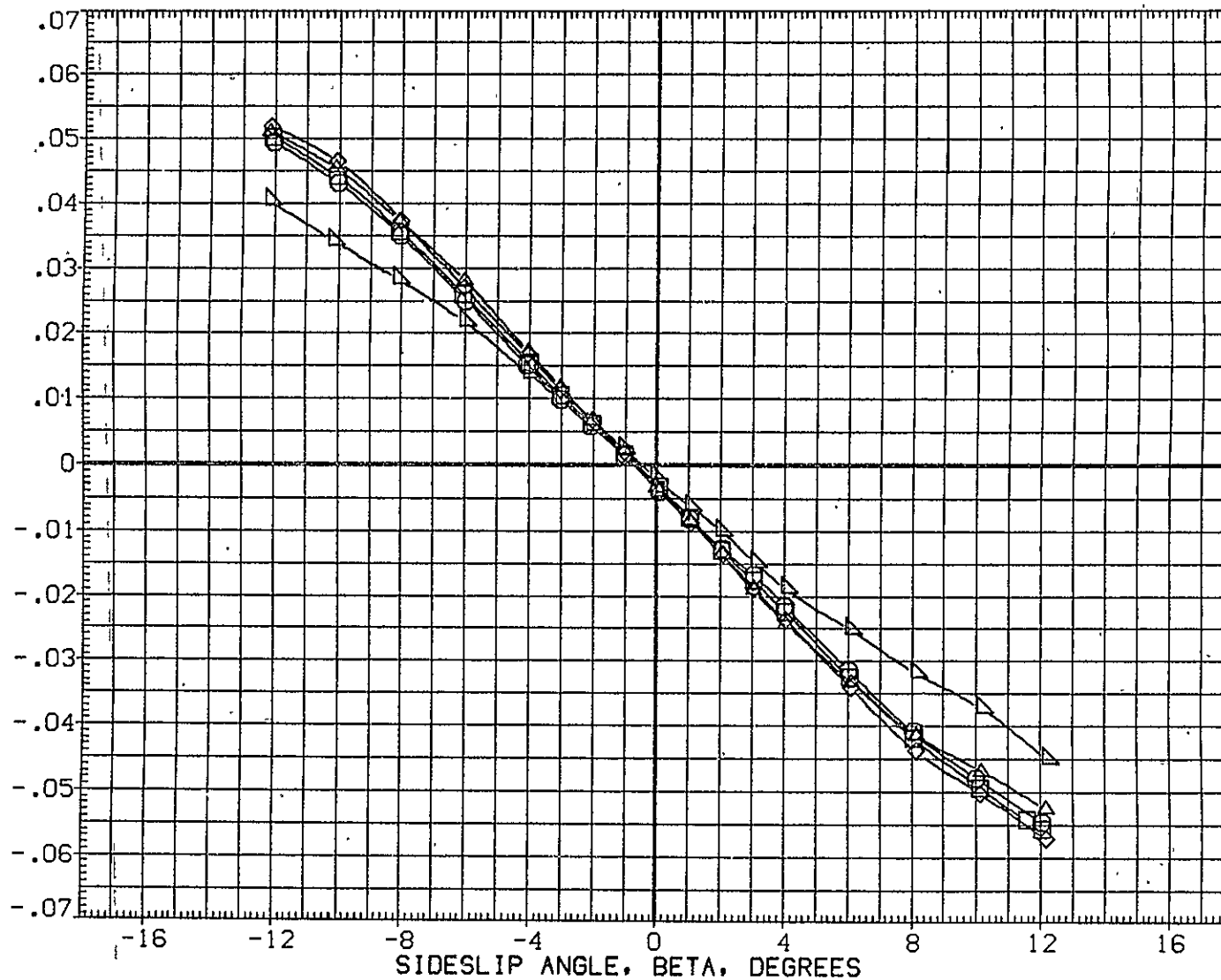


FIG.161 747+0RB(8 DEG)+STD SP,VERT TAIL OFF,FLAPS UP,ALPI=6,DE=0/0 (S=-1) 0RB

CA5 K1 FO H15.1A

(PLUS. 0RB TC5 AT38.2A)(RGM103)

SYMBOL

○
□
◇
△
▽

MACH

.150
.300
.500
.600
.700

ALPHA1
ELV-1B
S1-2
S5-6

PARAMETRIC VALUES

6.000 STAB 1.000
.000 ELV-0B .000
.000 S3-4 45.000
20.000 10RB 7.850

REFERENCE INFORMATION

SREF 5500.0000 SQ.FT.
LREF 327.8000 IN.
BREF 2348.0000 IN.
XMRP 1339.9100 IN. XC
YMRP .0000 IN. YC
ZMRP 190.7500 IN. ZC
SCALE .0300

SIDE FORCE COEFFICIENT, CY

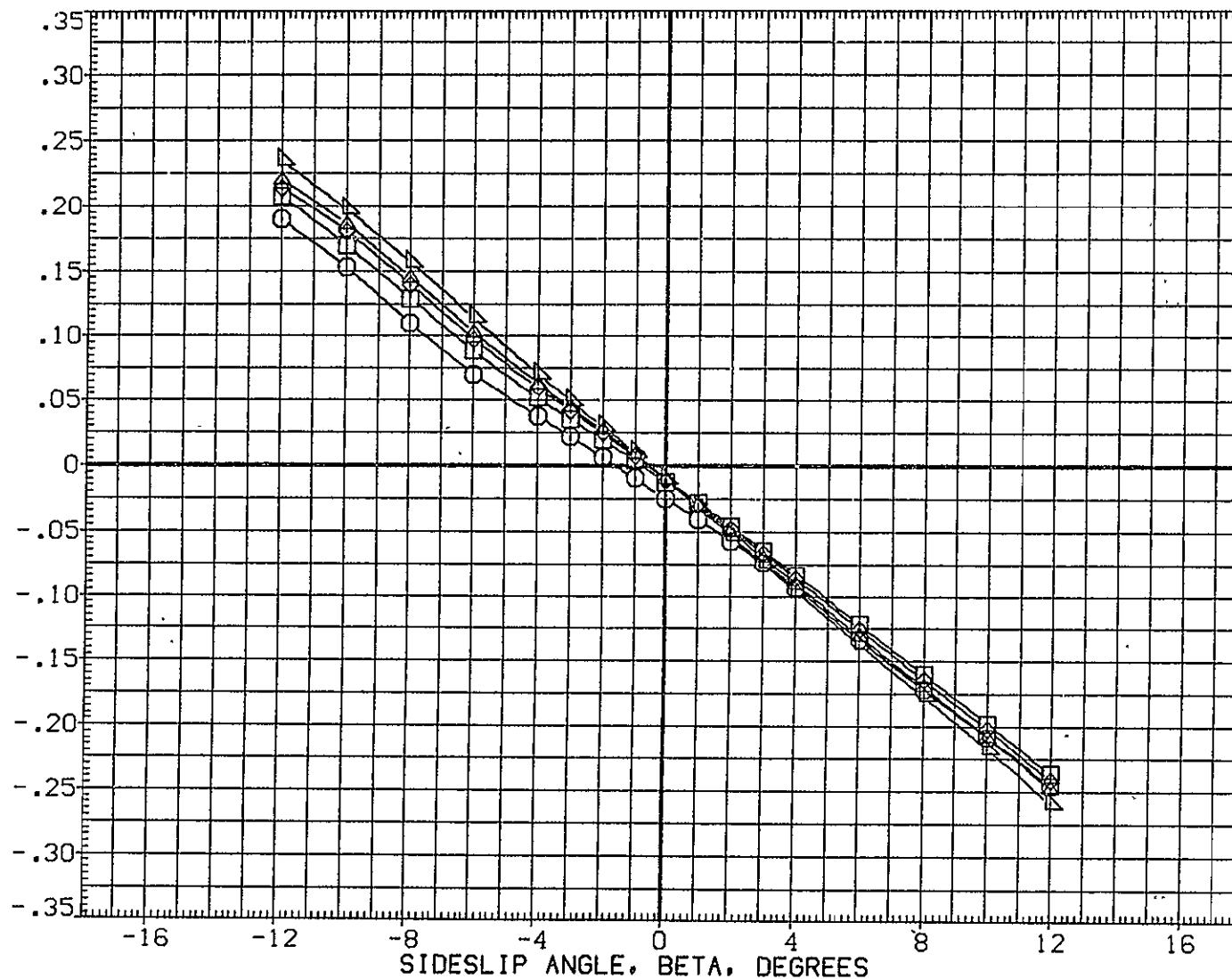


FIG.162 747+0RB(8 DEG)+STD SP,VERT TAIL OFF,FLAPS UP,ALPI=6,DE=0/0 (S=+1) TOTAL

CA5 K1 FO H15.1A

(PLUS. 0RB TC5 AT38.2A)(RGM103)

SYMBOL	MACH	PARAMETRIC VALUES
○	.150	ALPHA I 6.000 STAB 1.000
□	.300	ELV-1B .000 ELV-0B .000
◇	.500	S1-2 .000 S3-4 45.000
△	.600	S5-6 20.000 10RB 7.850
▽	.700	

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

YAWING MOMENT COEFFICIENT, CLN. (STABILITY AXIS)

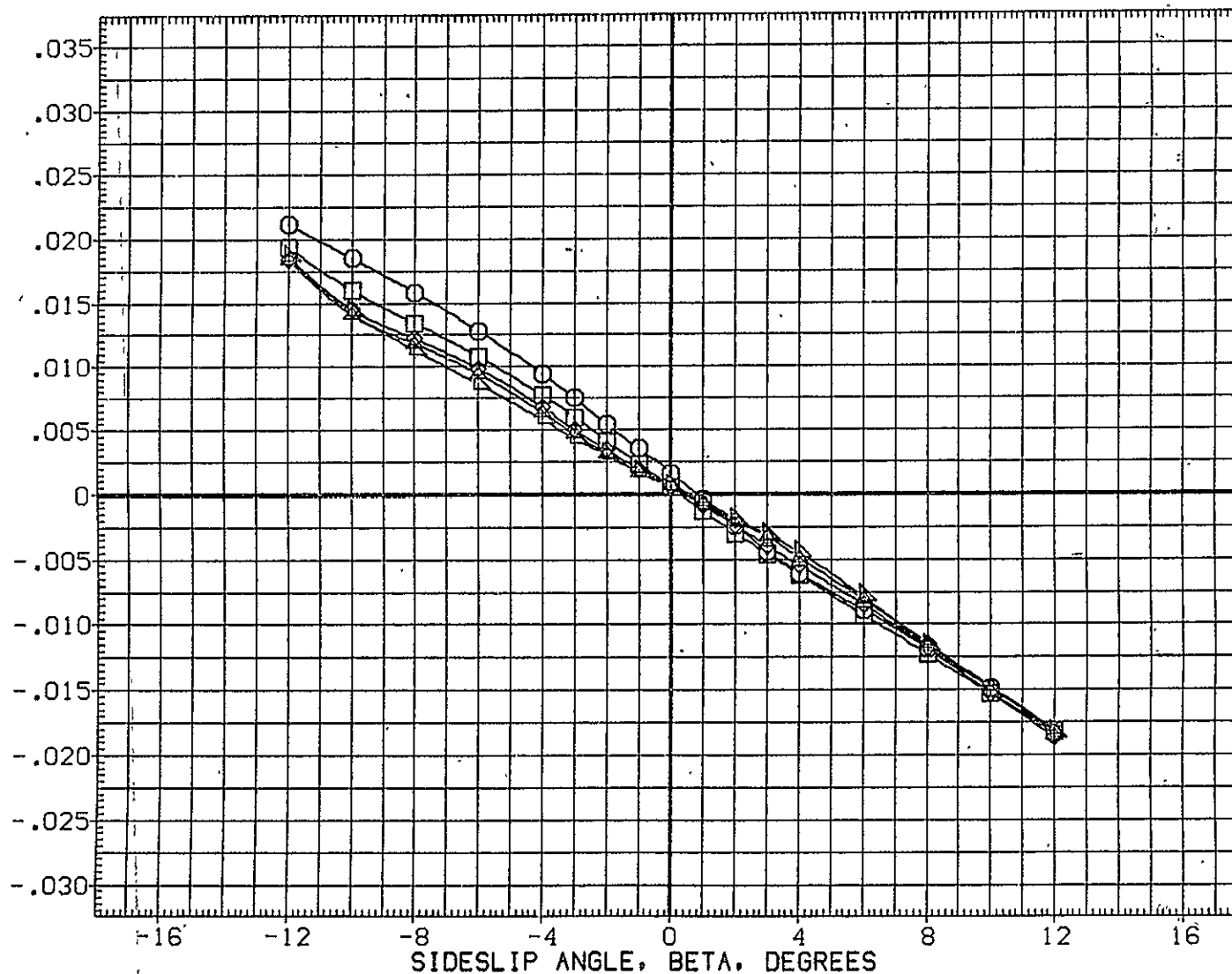


FIG.162 747+0RB(8 DEG)+STD SP,VERT TAIL OFF,FLAPS UP,ALPI=6,DE=0/0 (S=+1) TOTAL

CA5 K1 F0 H15.1A

(PLUS. ORB TC5 AT38.2A)(RGM103)

SYMBOL	MACH	PARAMETRIC VALUES
○	.150	ALPHA1 6.000 STAB 1.000
□	.300	ELV-1B .000 ELV-OB .000
◇	.500	S1-2 .000 S3-4 45.000
△	.600	S5-6 20.000 10RB 7.850
▽	.700	

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

ROLLING MOMENT COEFFICIENT, CSL, (STABILITY AXIS)

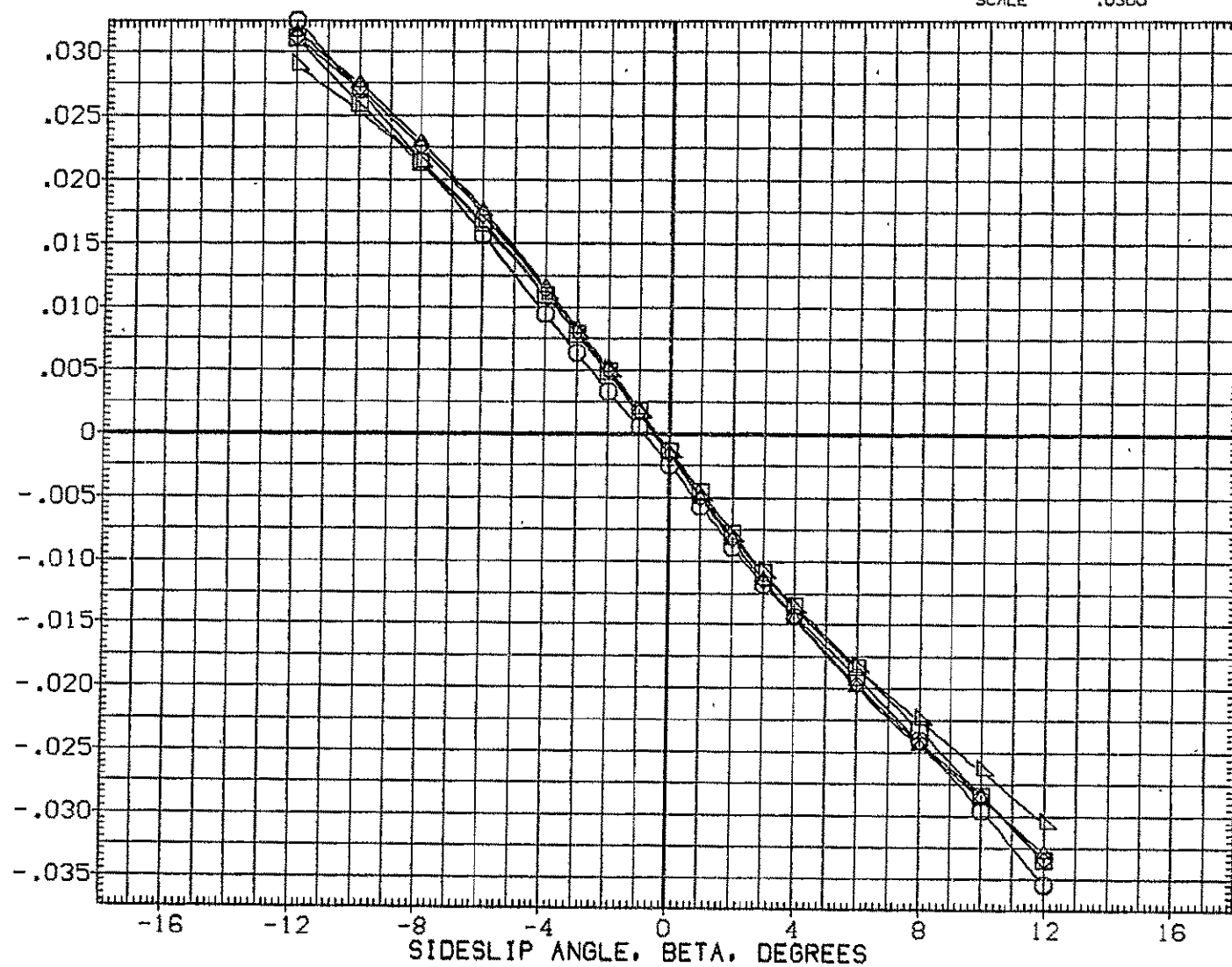


FIG.162 747+ORB(8 DEG)+STD SP, VERT TAIL OFF, FLAPS UP, ALPI=6, DE=0/0 (S=+1) TOTAL

SYMBOL	MACH	PARAMETRIC VALUES
○	.150	ALPHA1 6.000 STAB 1.000
◇	.300	ELV-1B .000 ELV-OB .000
□	.500	S1-2 .000 S3-4 45.000
△	.600	S5-6 20.000 10RB 7.850
▽	.700	

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

INCREMENTAL SIDE FORCE COEFFICIENT(STABILITY AXIS), DCY

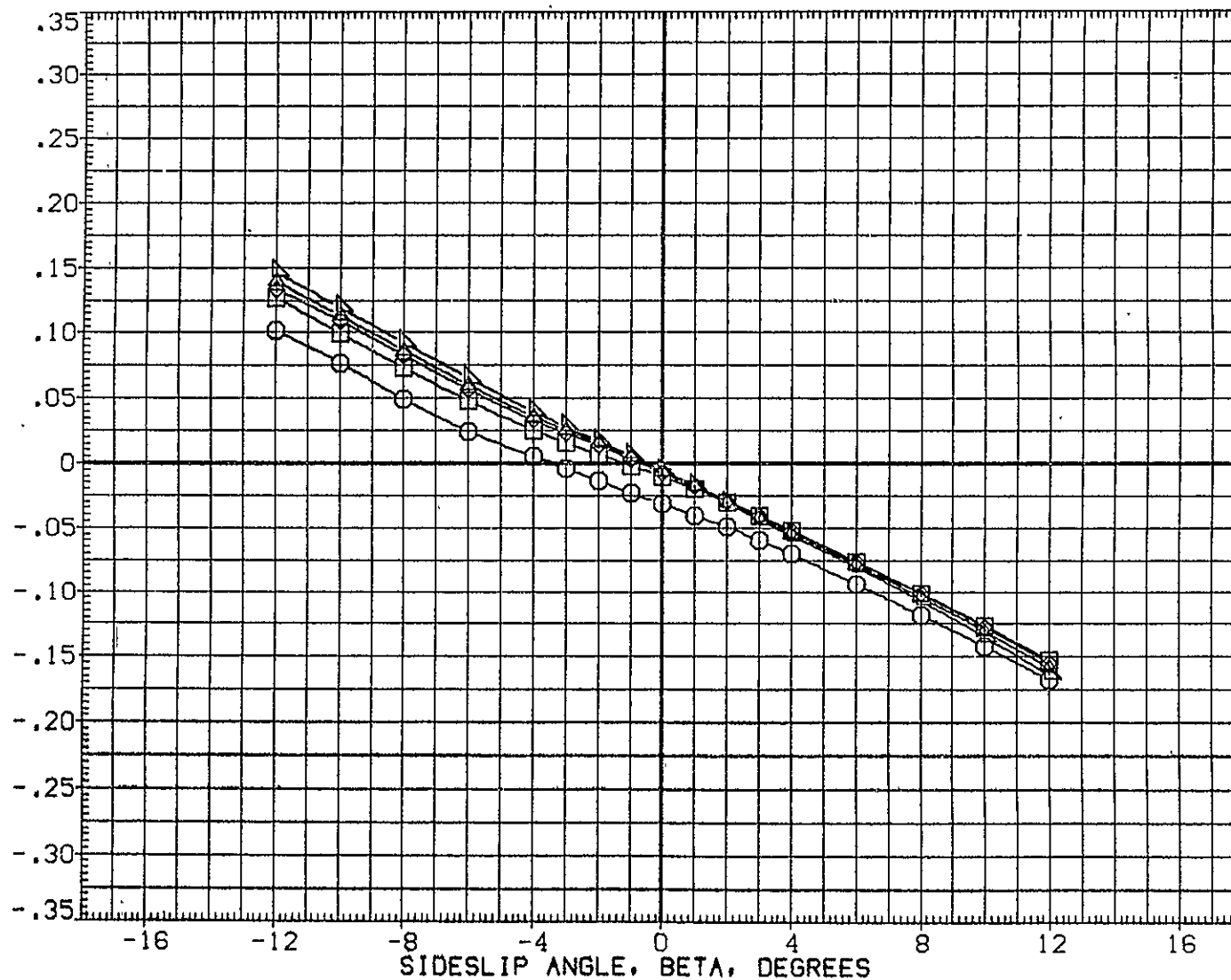


FIG.163 747+ORB(8 DEG)+STD SP, VERT TAIL OFF, FLAPS UP, ALPI=6, DE=0/0 (S=+1) 747

CA5 K1 F0 H15.1A

MINUS ORB TC5 AT38.2A (BGM103)

SYMBOL	MACH	PARAMETRIC VALUES
○	.150	ALPHA1 6.000 STAB 1.000
□	.300	ELV-1B .000 ELV-0B .000
◇	.500	S1-2 .000 S3-4 45.000
△	.600	S5-6 20.000 IORB 7.850
▽	.700	

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XM RP	1339.9100	IN. XC
YM RP	.0000	IN. YC
ZM RP	190.7500	IN. ZC
SCALE	.0300	

INCREMENTAL YAWING MOMENT COEFFICIENT (STABILITY AXIS), DCIN

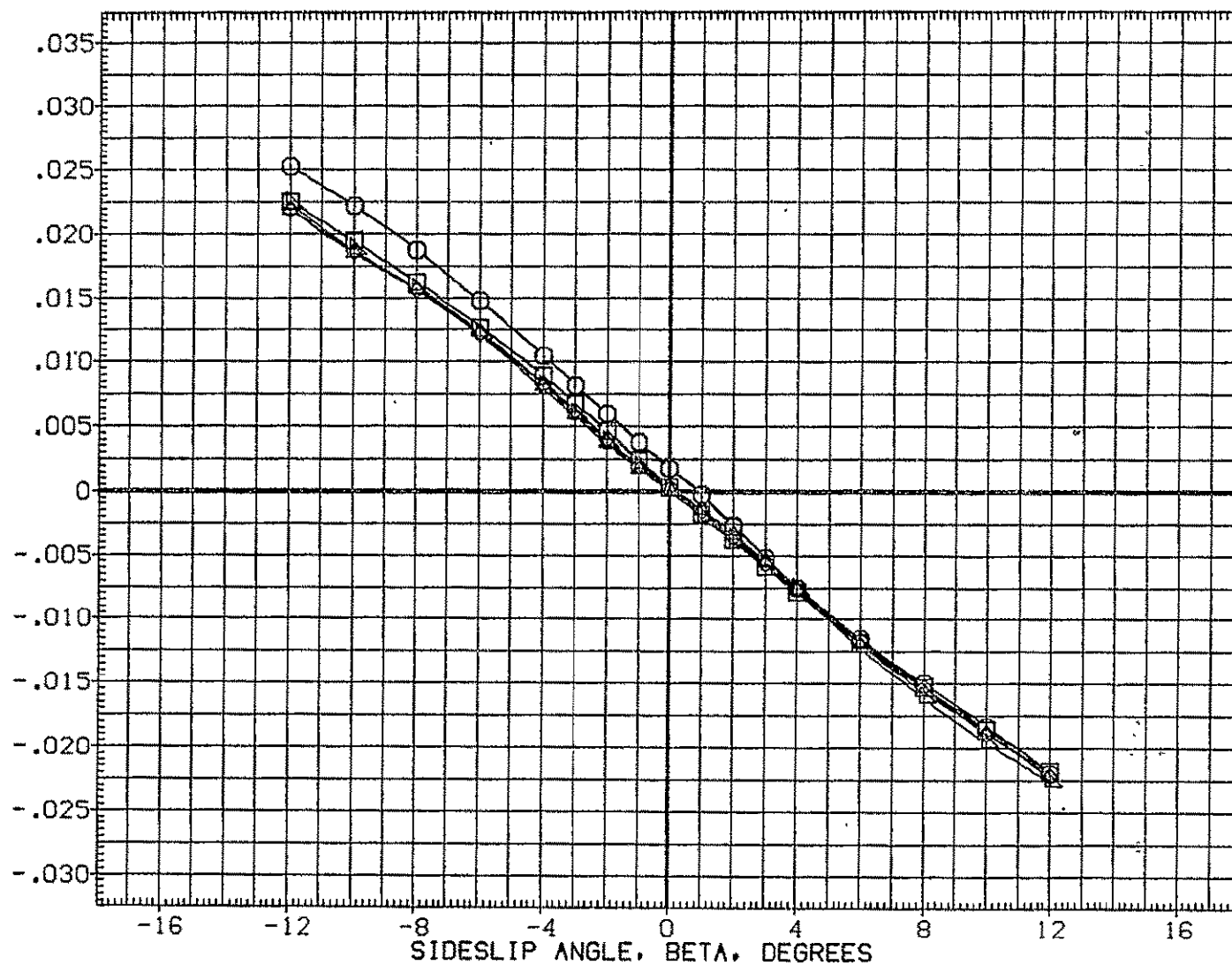


FIG.163 747+0RB(8 DEG)+STD SP, VERT TAIL OFF, FLAPS UP, ALPI=6, DE=0/0 (S=+1) 747

SYMBOL	MACH	PARAMETRIC VALUES
○	.150	ALPHA1 6.000 STAB 1.000
□	.300	ELV-1B .000 ELV-0B .000
◇	.500	S1-2 .000 S3-4 45.000
△	.600	S5-6 20.000 10RB 7.850
▽	.700	

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

INCREMENTAL ROLLING MOMENT COEFFICIENT(STABILITY AXIS), DCSL

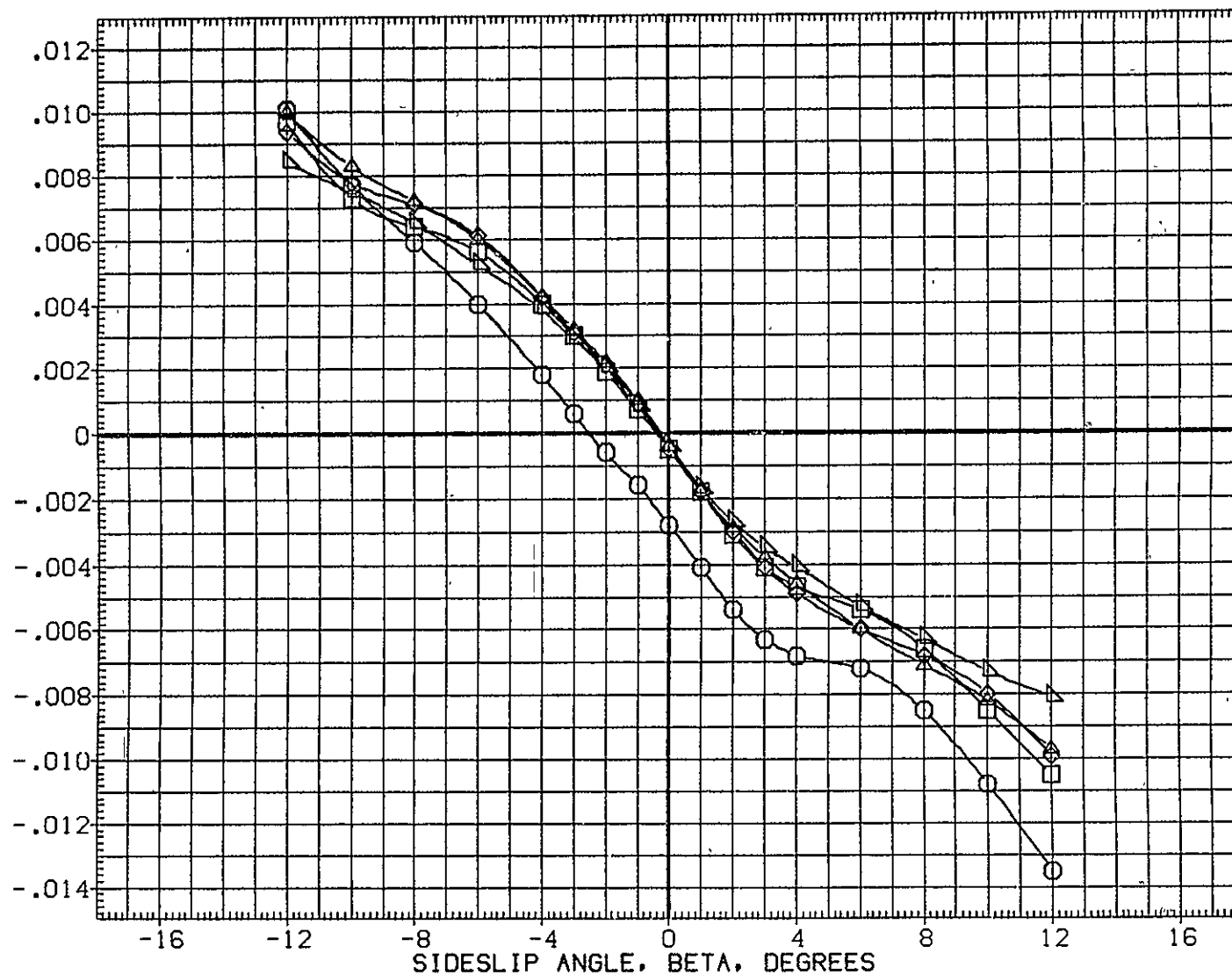


FIG.163 747+0RB(8 DEG)+STD SP,VERT TAIL OFF,FLAPS UP,ALPI=6,DE=0/0 (S=+1) 747

CA5 0RB TC5, AT38.2A (PRES. K1 FO H15.1A

(XGM103)

SYMBOL
○
□
◇
△
▽

MACH
.149
.301
.501
.600
.700

PARAMETRIC VALUES

ALPHA1	6.000	STAB	1.000
ELV-1B	.000	ELV-0B	.000
S1-2	.000	S3-4	45.000
S5-6	20.000	10RB	7.850

REFERENCE INFORMATION

SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN. X0
YMRP	.0000	IN. Y0
ZMRP	375.0000	IN. Z0
SCALE	.0300	

SIDE FORCE COEFFICIENT, CY

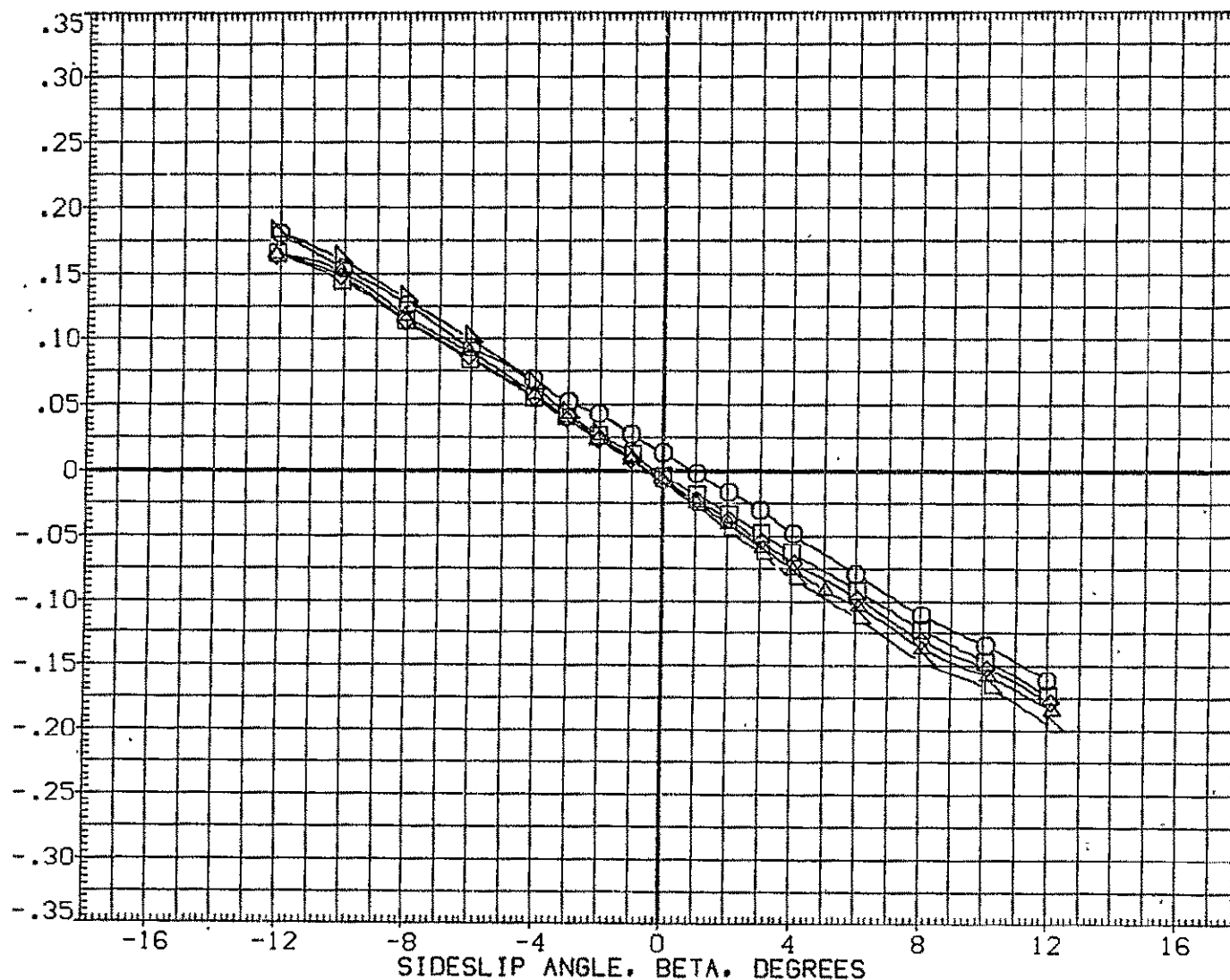


FIG.164 747+0RB(8 DEG)+STD SP, VERT TAIL OFF, FLAPS UP, ALPI=6, DE=0/0 (S=+1) 0RB

SYMBOL	MACH	PARAMETRIC VALUES
○	.149	ALPHA1 6.000 STAB 1.000
□	.301	ELV-1B .000 ELV-0B .000
◇	.501	S1-2 .000 S3-4 45.000
△	.600	S5-6 20.000 10RB 7.850
▽	.700	

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN. X0
YMRP	.0000	IN. Y0
ZMRP	375.0000	IN. Z0
SCALE	.0300	

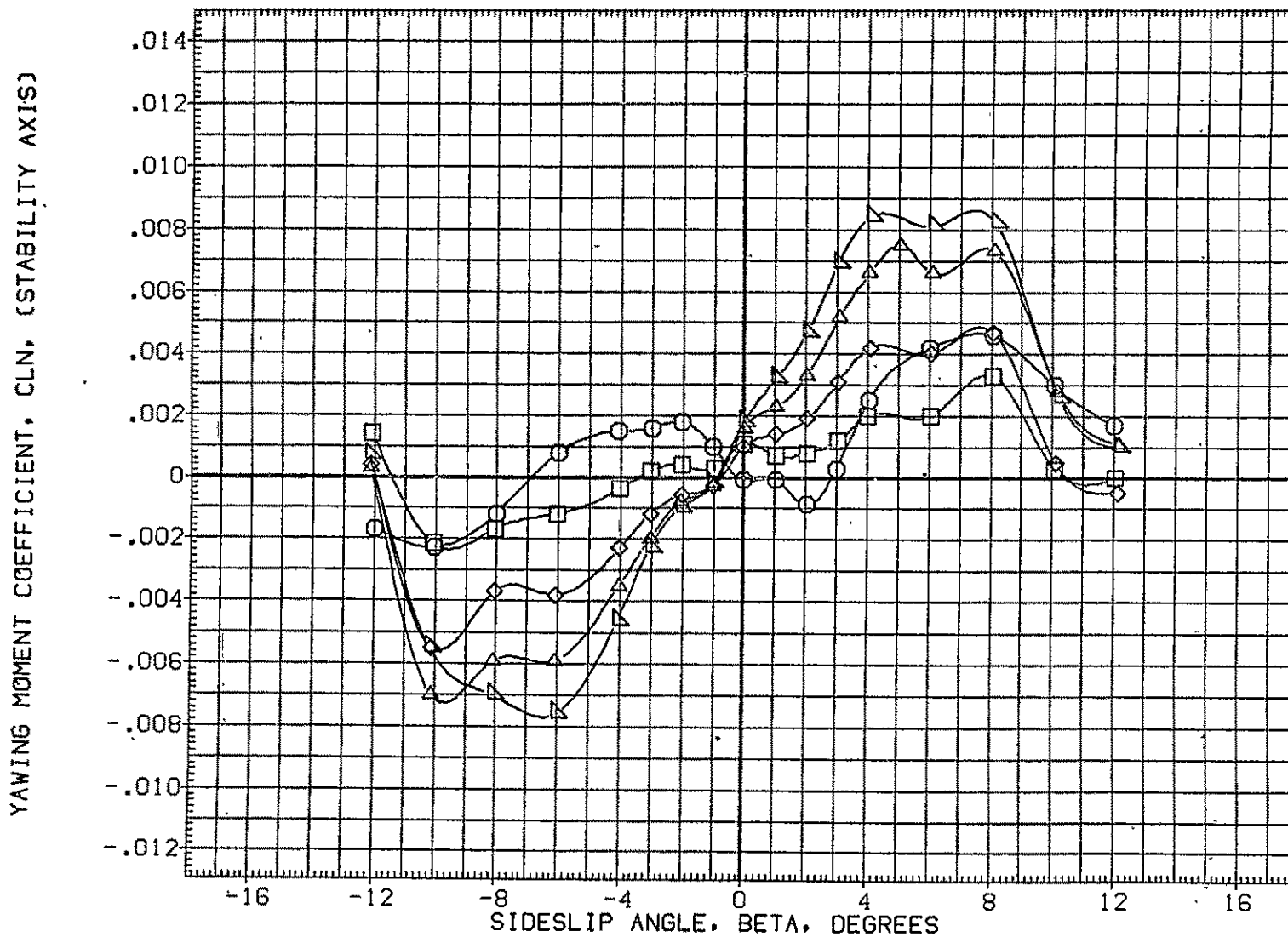


FIG.164 747+ORB(8 DEG)+STD SP,VERT TAIL OFF,FLAPS UP,ALPI=6,DE=0/0 (S=+1) ORB

CA5 ORB TC5 AT38.2A (PRES. K1 FO H15.1A

(XGM103)

SYMBOL
 ○
 □
 ◇
 △
 ▽

MACH	ALPHA1	PARAMETRIC VALUES	STAB	1.000
.149	ALPHA1	6.000	STAB	1.000
.301	ELV-1B	.000	ELV-OB	.000
.501	S1-2	.000	S3-4	45.000
.600	S5-6	20.000	10RB	7.850
.700				

REFERENCE INFORMATION		
SREF	2690.0000	SG, FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN. X0
YMRP	.0000	IN. Y0
ZMRP	375.0000	IN. Z0
SCALE	.0300	

ROLLING MOMENT COEFFICIENT, CSL, (STABILITY AXIS)

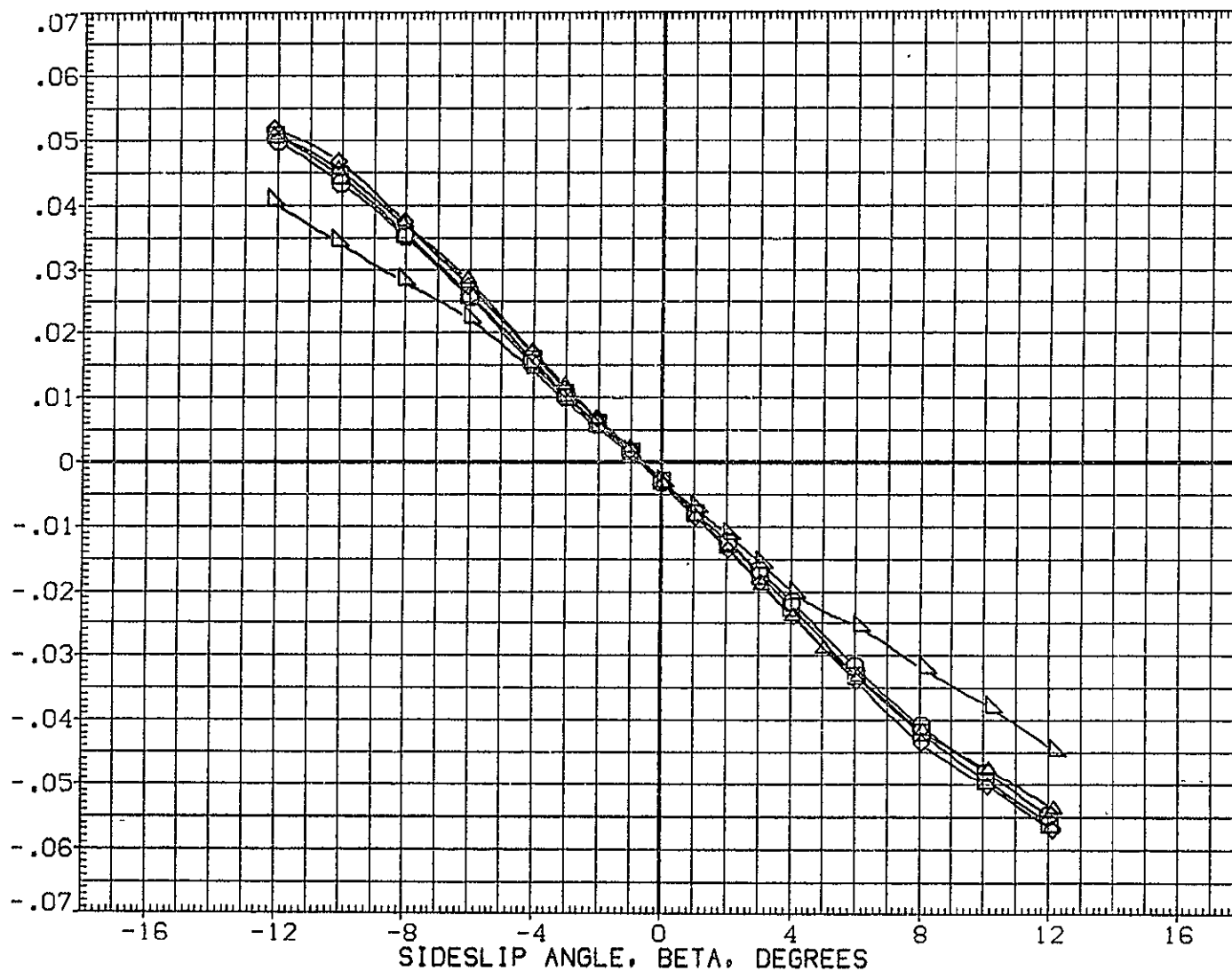


FIG.164 747+ORB(8 DEG)+STD SP,VERT TAIL OFF,FLAPS UP,ALPI=6,DE=0/0 (S=+1) ORB

SYMBOL	MACH	PARAMETRIC VALUES
○	.300	ALPHA1 2.000 STAB -2.000
□	.500	ELV-1B .000 ELV-0B 3.000
◇	.600	S1-2 .000 S3-4 .000
△	.700	S5-6 .000 10RB 4.000

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

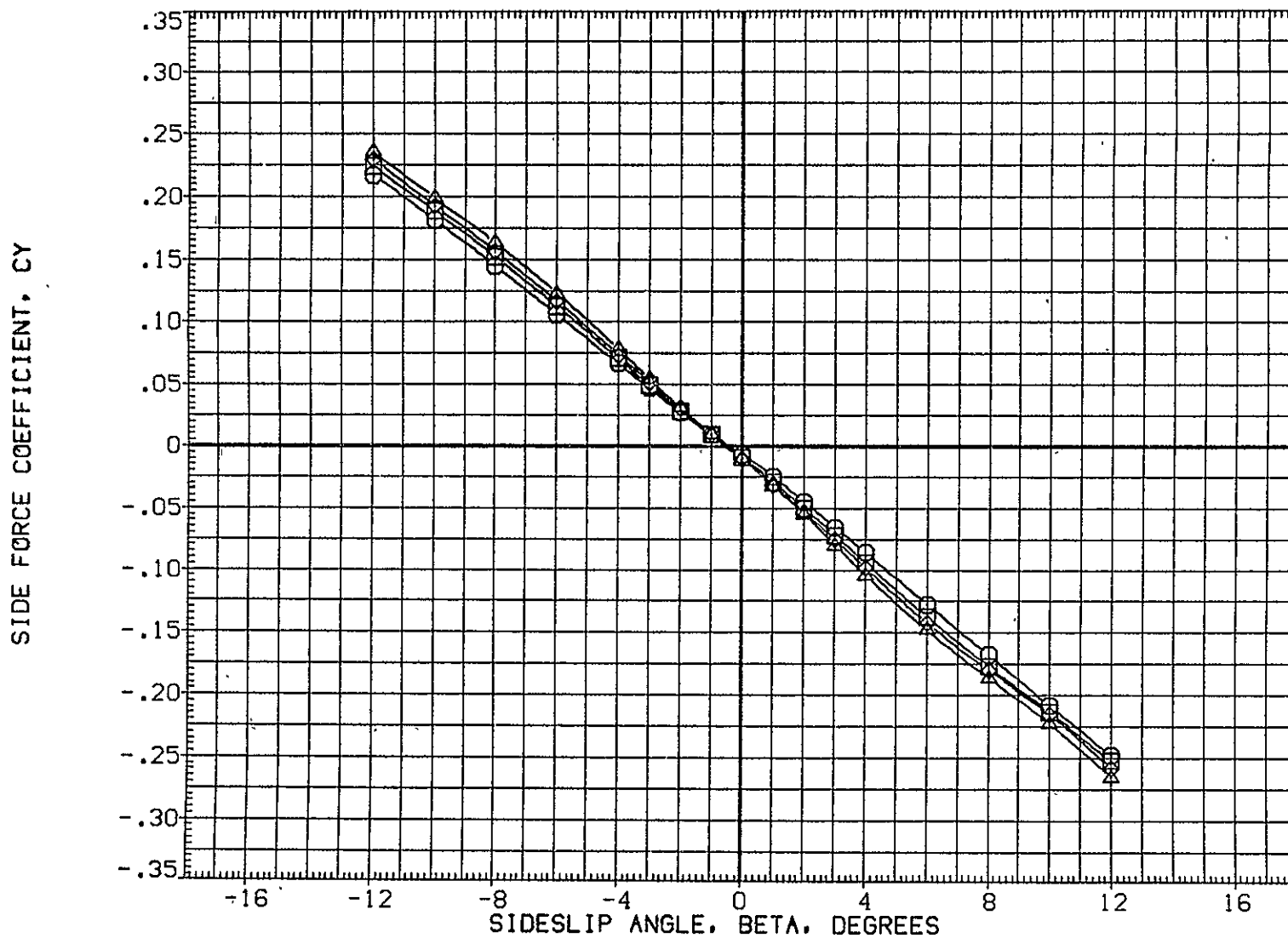


FIG.165 747+ORB(4 DEG),VERT TAIL OFF,FLAPS UP FERRY,ALPHA1=2 (S=-2)

TOTAL

CA5 K1 FO H15.1A

(PLUS. 0RB TC5 AT38.3)(RGM104)

SYMBOL	MACH	ALPHA	PARAMETRIC VALUES
○	.300	ALPHA1	2.000 STAB -2.000
□	.500	ELV-1B	.000 ELV-0B 3.000
◇	.600	S1-2	.000 S3-4 .000
△	.700	.000 10RB 4.000	

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

YAWING MOMENT COEFFICIENT, CLN. (STABILITY AXIS)

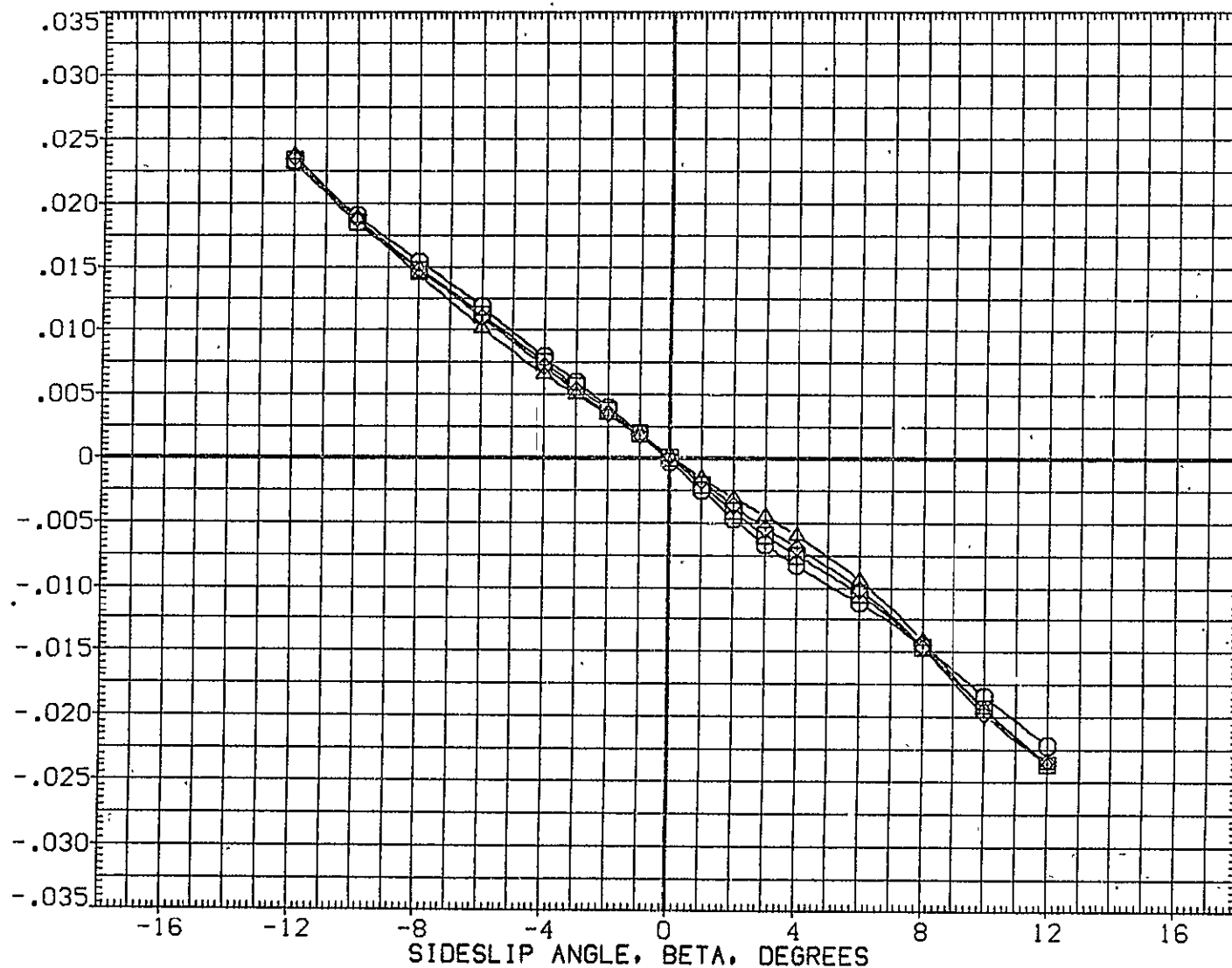


FIG.165 747+0RB(4 DEG), VERT TAIL OFF, FLAPS UP FERRY, ALPHA1=2 (S=-2)

TOTAL

SYMBOL	MACH	PARAMETRIC VALUES
○	.300	ALPHA1 2.000 STAB -2.000
□	.500	ELV-1B .000 ELV-0B 3.000
◇	.600	S1-2 .000 S3-4 .000
△	.700	S5-6 .000 10RB 4.000

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

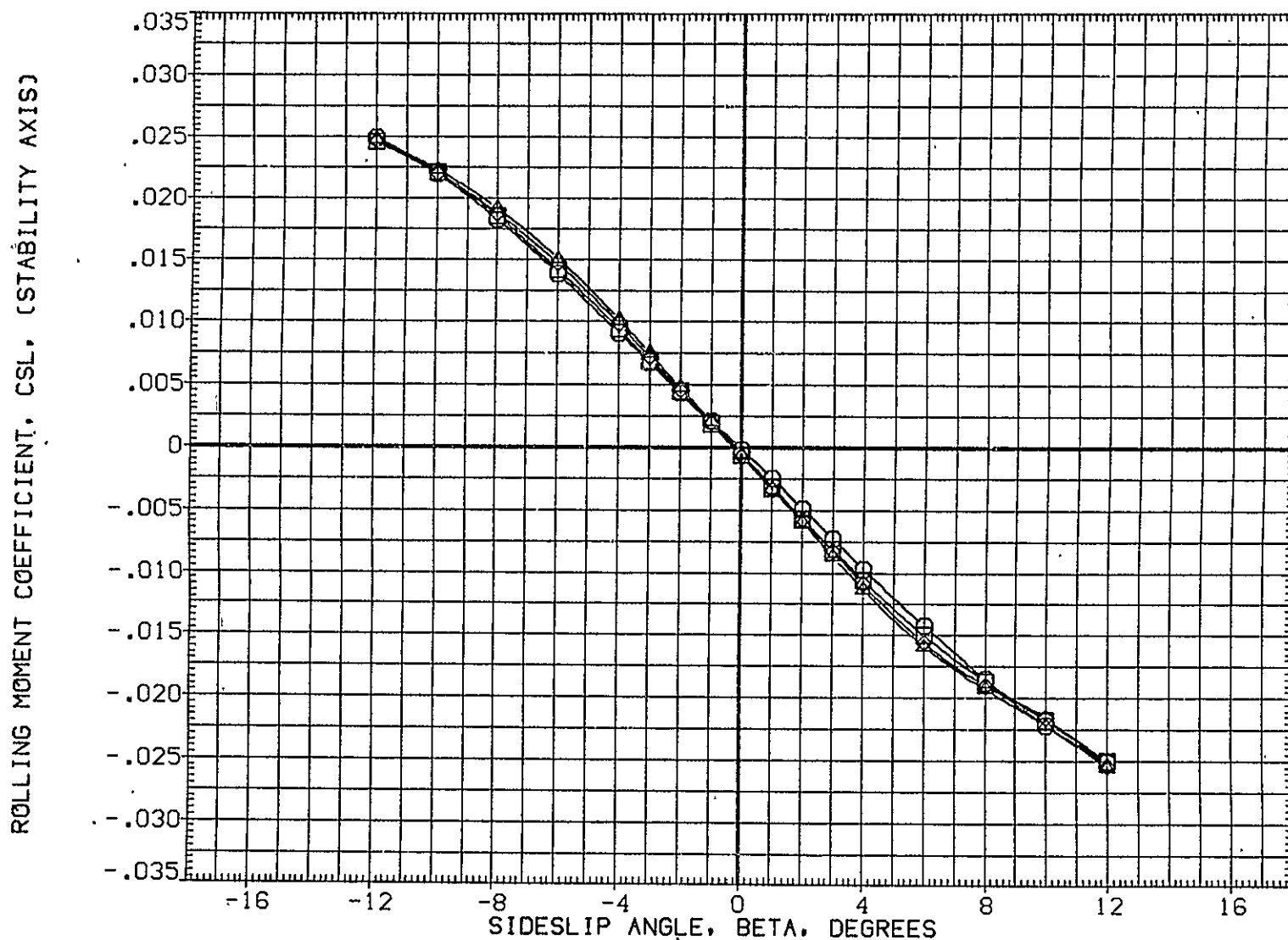


FIG.165 747+0RB(4 DEG),VERT TAIL OFF,FLAPS UP FERRY,ALPHA1=2 (S=-2)

TOTAL

CA5 K1 FO H15.1A

MINUS 0RB TC5 AT38.3 (BGM104)

SYMBOL	MACH	PARAMETRIC VALUES
○	.300	ALPHA1 2.000 STAB -2.000
□	.500	ELV-1B .000 ELV-0B 3.000
◇	.600	S1-2 .000 S3-4 .000
△	.700	S5-6 .000 10RB 4.000

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

INCREMENTAL SIDE FORCE COEFFICIENT(STABILITY AXIS), DCY

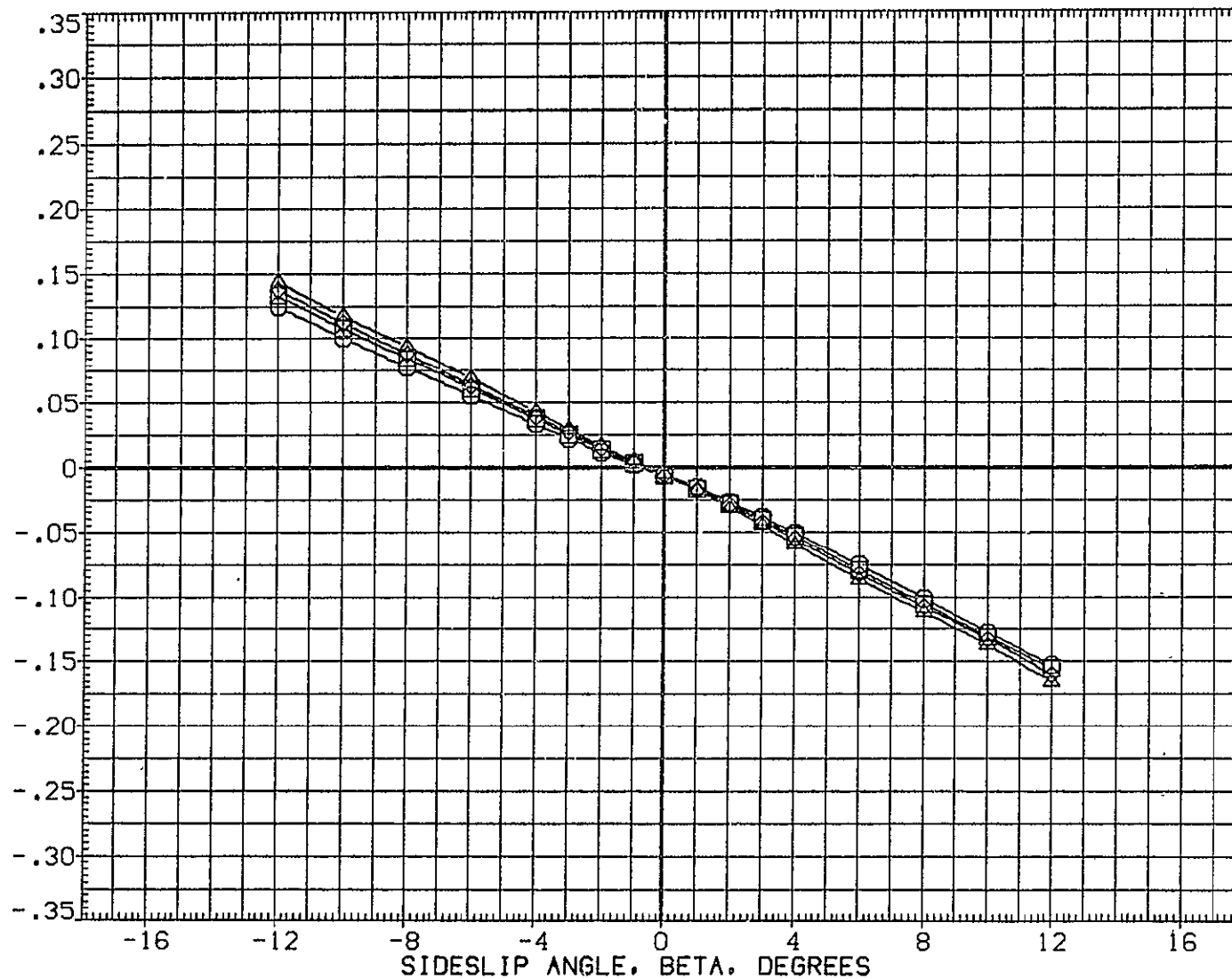


FIG.166 747+0RB(4 DEG), VERT TAIL OFF, FLAPS UP FERRY, ALPHA1=2 (S=-2)

747

SYMBOL	MACH	PARAMETRIC VALUES
○	.300	ALPHA1 2.000 STAB -2.000
□	.500	ELV-1B .000 ELV-0B 3.000
◇	.600	S1-2 .000 S3-4 .000
△	.700	S5-6 .000 10RB 4.000

REFERENCE INFORMATION		
SREF	5500.0000	50.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

INCREMENTAL YAWING MOMENT COEFFICIENT(STABILITY AXIS), DCLN

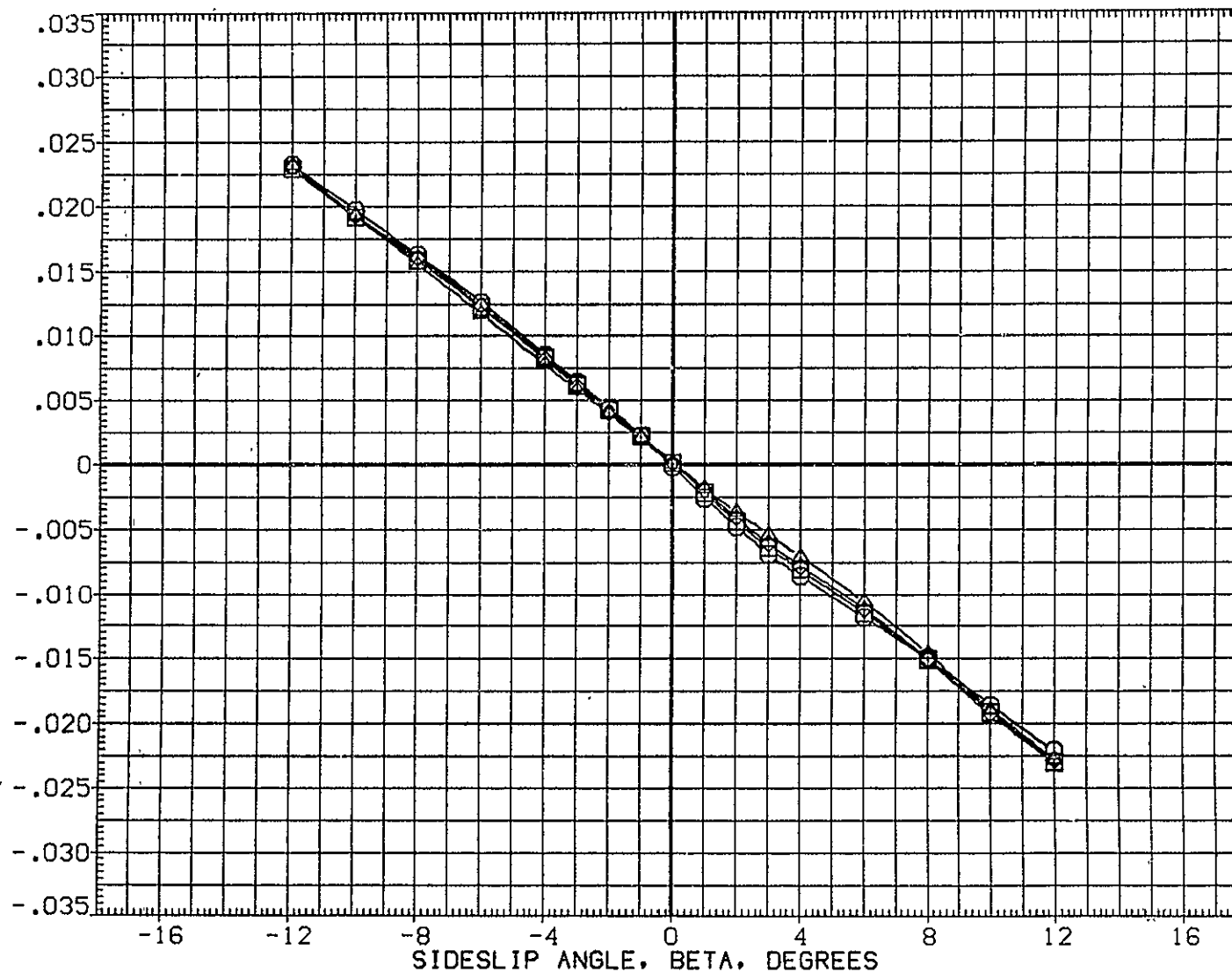


FIG.166 747+0RB(4 DEG),VERT TAIL OFF,FLAPS UP FERRY,ALPHA1=2 (S=-2)

747

CA5 K1 FO H15.1A

MINUS ORB TC5 AT38.3 (BGM104)

SYMBOL	MACH	PARAMETRIC VALUES
○	.300	ALPHA1 2.000 STAB -2.000
□	.500	ELV-1B .000 ELV-OB 3.000
◇	.600	S1-2 .000 S3-4 .000
△	.700	SS-6 .000 IORB 4.000

REFERENCE INFORMATION		
SREF	5500.0000	50.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

INCREMENTAL ROLLING MOMENT COEFFICIENT(STABILITY AXIS), DCSL

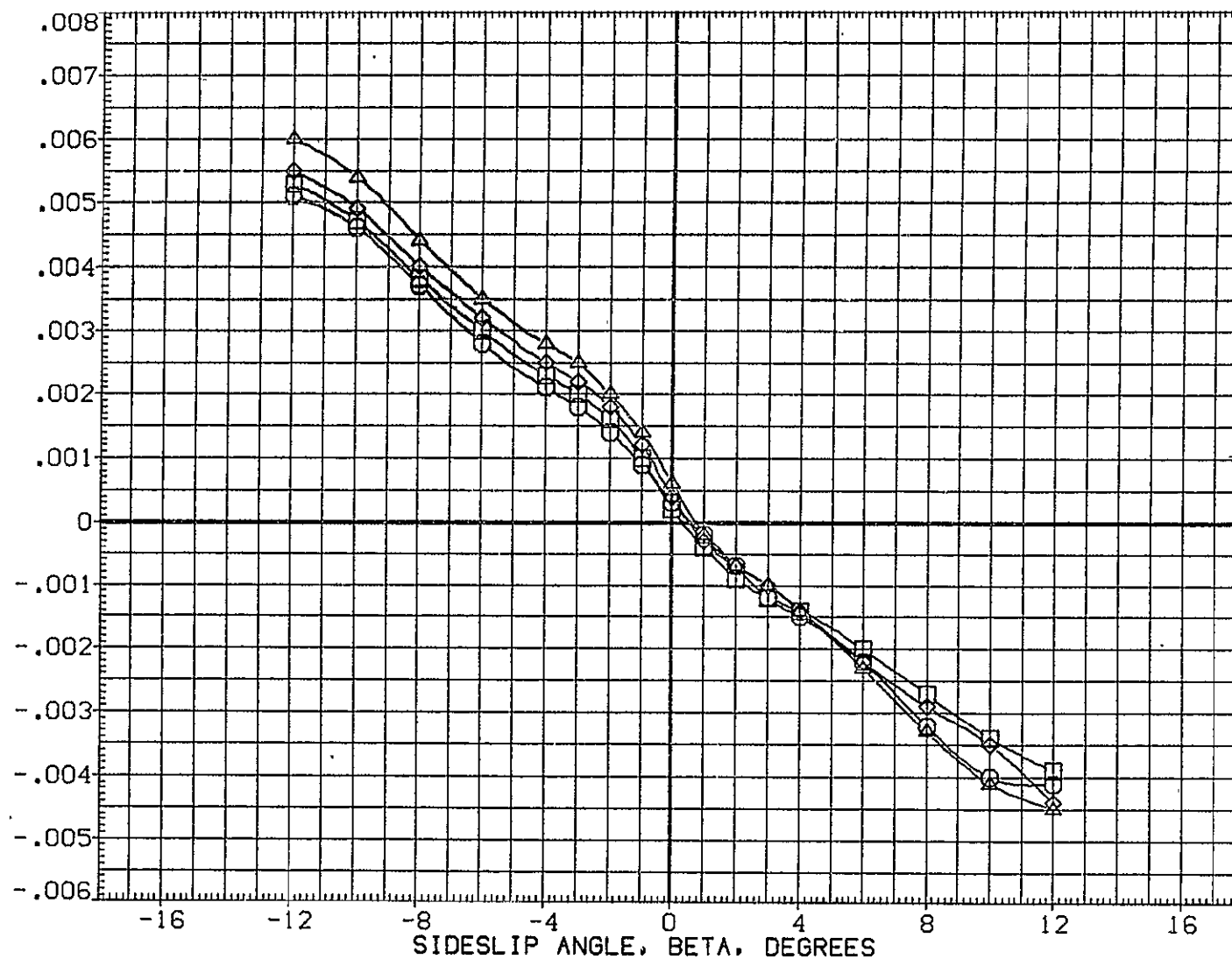


FIG.166 747+ORB(4 DEG), VERT TAIL OFF, FLAPS UP FERRY, ALPHA1=2 (S=-2)

747

SYMBOL	MACH	PARAMETRIC VALUES	REFERENCE INFORMATION
○	.299	ALPHA1 2.000 STAB -2.000	SREF 2690.0000 SQ.FT.
□	.500	ELV-1B .000 ELV-0B 3.000	LREF 474.8100 IN.
◇	.601	S1-2 .000 S3-4 .000	BREF 936.6800 IN.
△	.700	S5-6 .000 10RB 4.000	XMRP 1109.0000 IN. X0
			YMRP .0000 IN. Y0
			ZMRP 375.0000 IN. Z0
			SCALE .0300

SIDE FORCE COEFFICIENT, CY

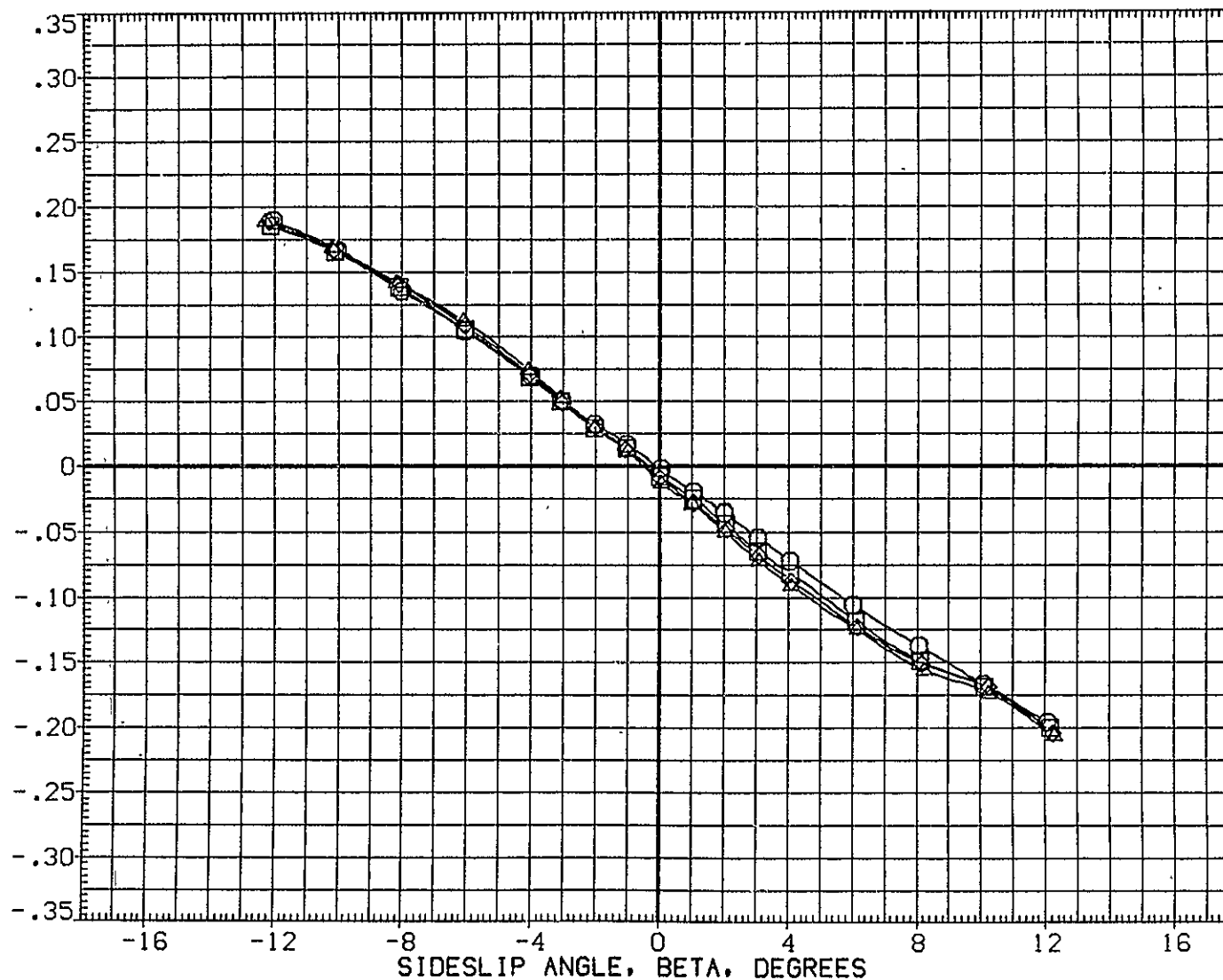


FIG.167 747+0RB(4 DEG), VERT TAIL OFF, FLAPS UP FERRY, ALPHA1=2 (S=-2)

0RB

CA5 ORB TC5 AT38.3 (PRES. K1 FO H15.1A

(XGM104)

SYMBOL	MACH	ALPHA1	PARAMETRIC VALUES
○	.299	2.000	STAB -2.000
□	.500	ELV-1B	.000 ELV-0B 3.000
◇	.601	S1-2	.000 S3-4 .000
△	.700	S5-6	.000 10RB 4.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN. X0
YMRP	.0000	IN. Y0
ZMRP	375.0000	IN. Z0
SCALE	.0300	

YAWING MOMENT COEFFICIENT, CLN. (STABILITY AXIS)

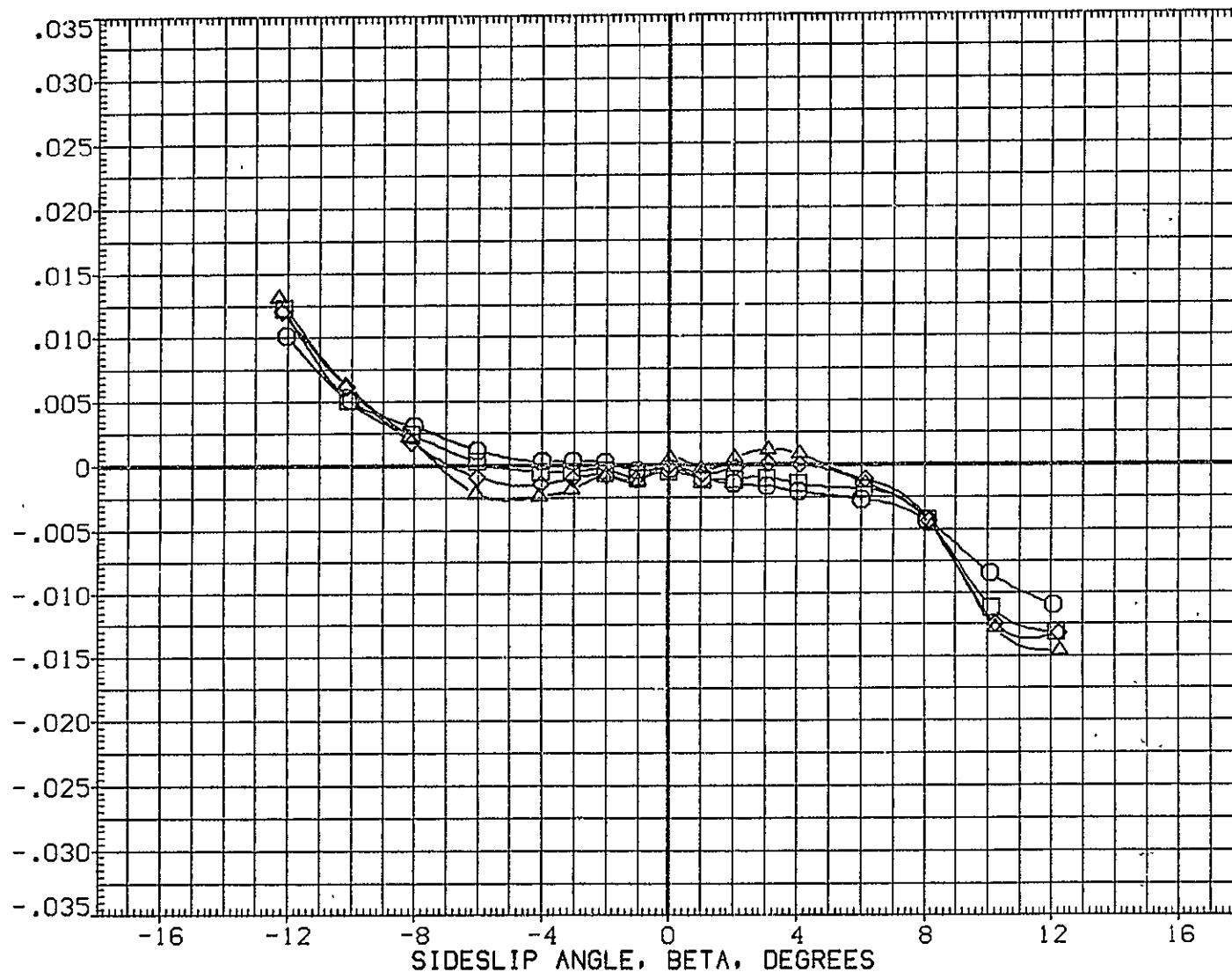


FIG.167 747+ORB(4 DEG),VERT TAIL OFF,FLAPS UP FERRY,ALPHA1=2 (S=-2)

ORB

SYMBOL

MACH

PARAMETRIC VALUES

REFERENCE INFORMATION

○
□
◇
△.299
.500
.601
.700ALPHA1
ELV-1B
S1-2
S5-62.000
.000
.000
.000STAB
ELV-0B
S3-4
10RB-2.000
3.000
.000
4.000

SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN. X0
YMRP	.0000	IN. Y0
ZMRP	375.0000	IN. Z0
SCALE	.0300	

ROLLING MOMENT COEFFICIENT, CSL, (STABILITY AXIS)

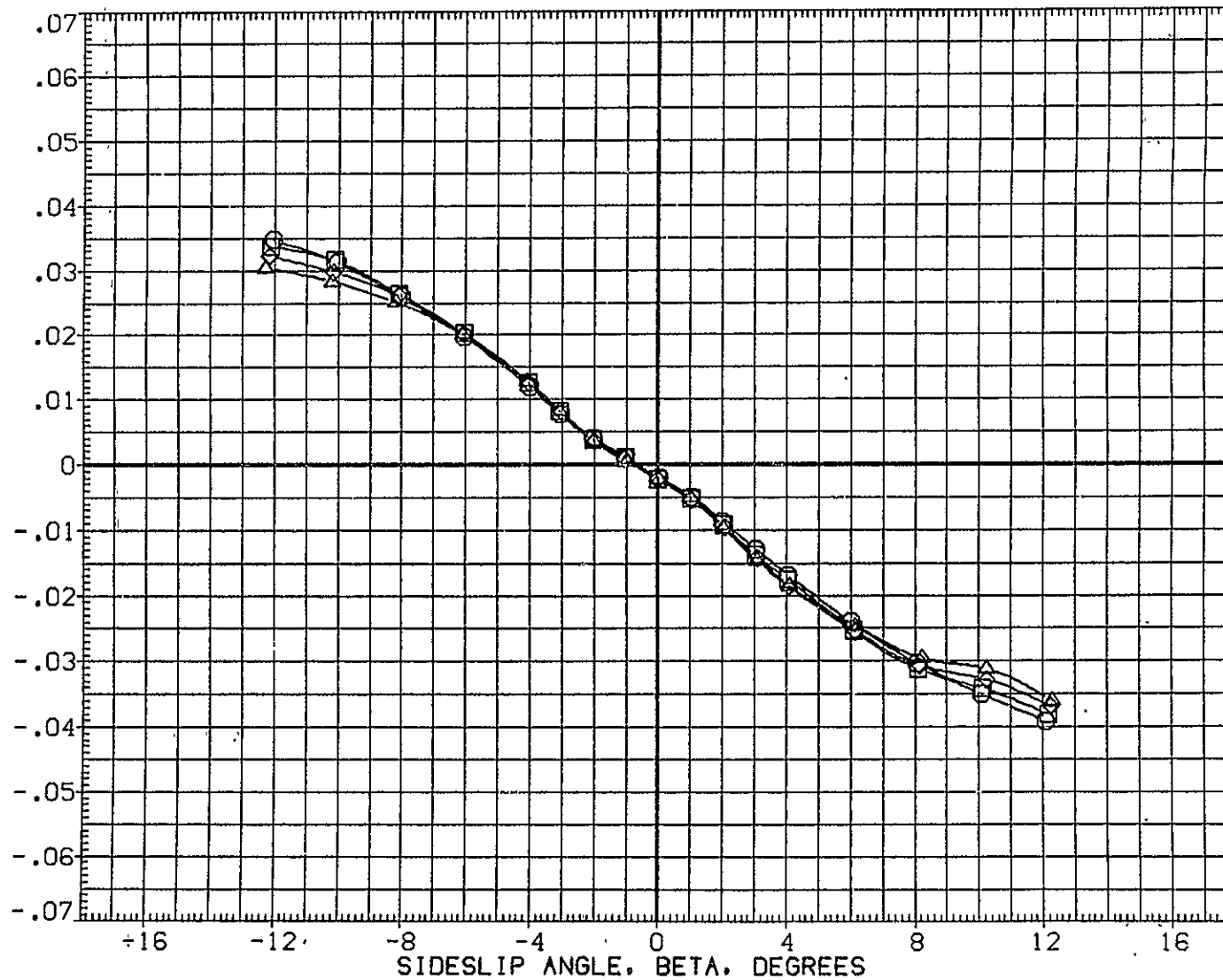


FIG.167 747+ORB(4 DEG),VERT TAIL OFF,FLAPS UP FERRY,ALPHA1=2 (S=-2)

ORB

CA5 K1 F0 H15.1A

(PLUS, ORB TC5 AT38.3)(RGM105)

SYMBOL
 ○
 □
 ◇
 △
 ▽

MACH
 .150
 .300
 .500
 .600
 .700

ALPHA1
 ELV-1B
 S1-2
 S5-6

PARAMETRIC VALUES
 6.000 STAB
 .000 ELV-0B
 .000 S3-4
 .000 10RB

-2.000
 3.000
 .000
 4.000

REFERENCE INFORMATION

SREF 5500.0000 SQ.FT.
 LREF 327.8000 IN.
 BREF 2348.0000 IN.
 XMRP 1339.9100 IN. XC
 YMRP .0000 IN. YC
 ZMRP 190.7500 IN. ZC
 SCALE .0300

SIDE FORCE COEFFICIENT, CY

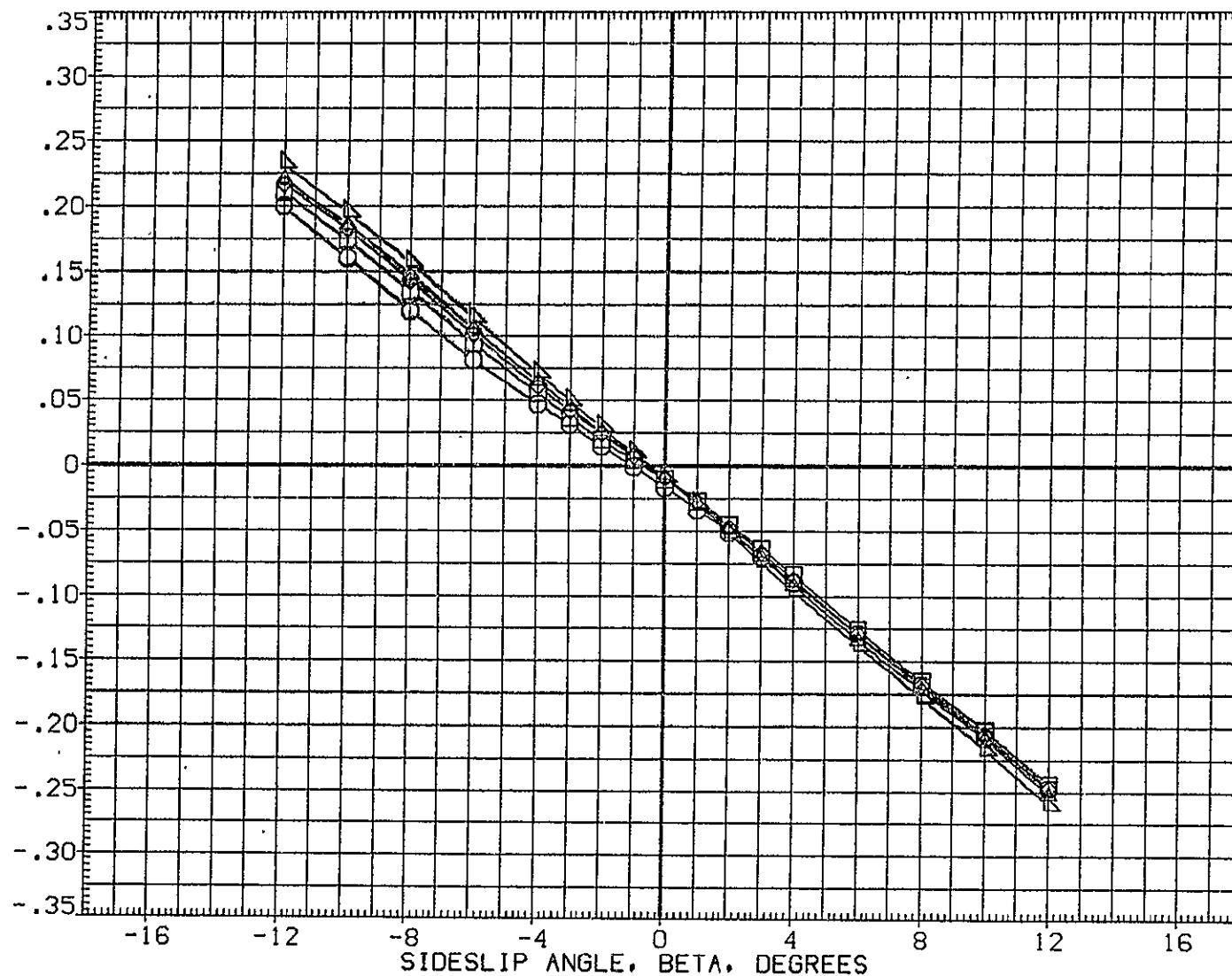


FIG.168 747+ORB(4 DEG), VERT TAIL OFF, FLAPS UP FERRY, ALPHA1=6(S=-2)

TOTAL

SYMBOL	MACH	PARAMETRIC VALUES
○	.150	ALPHA1 6.000 STAB -2.000
□	.300	ELV-1B .000 ELV-0B 3.000
◇	.500	S1-2 .000 S3-4 .000
△	.600	S5-6 .000 10RB 4.000
▽	.700	

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

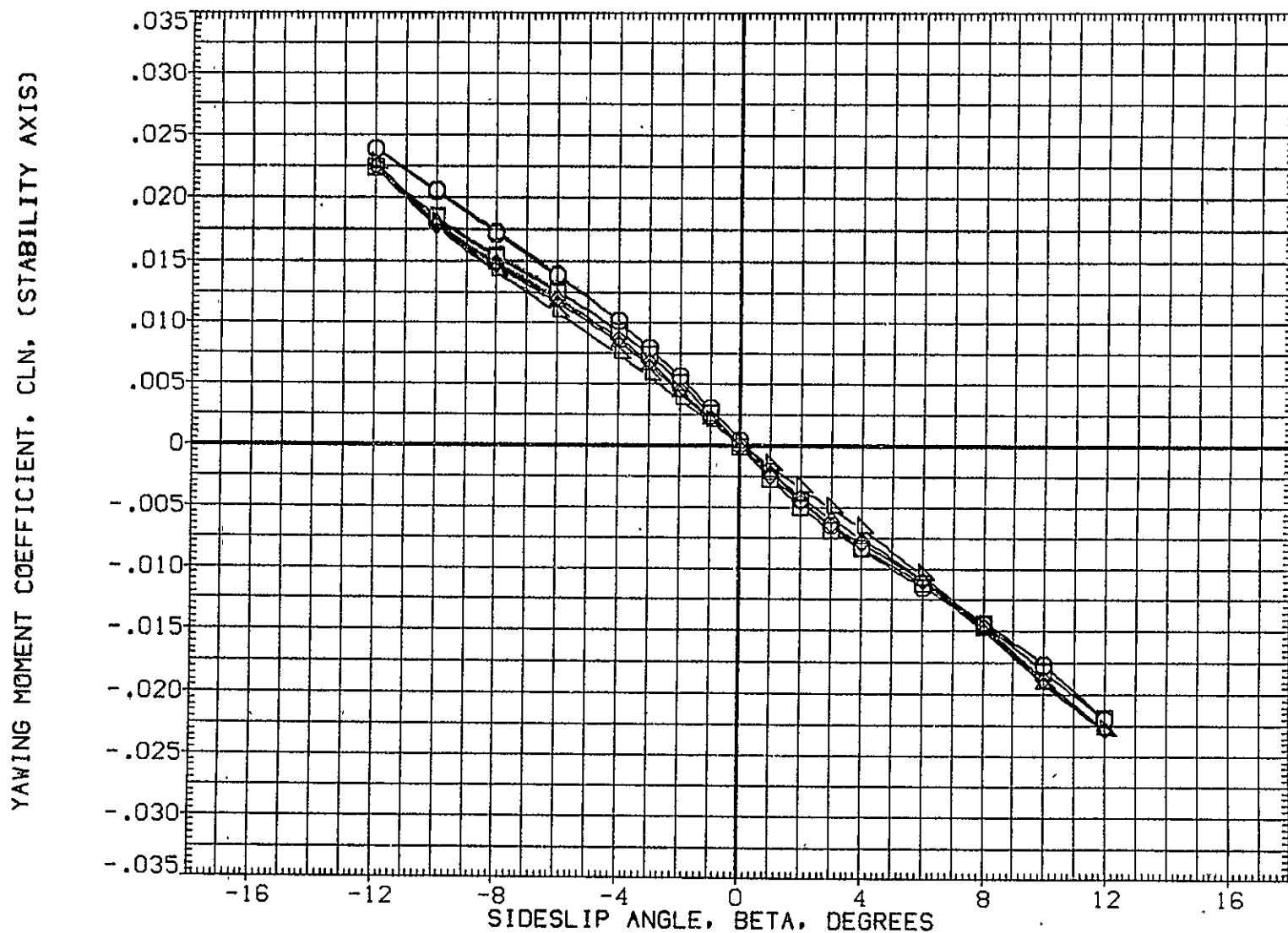


FIG.168 747+0RB(4 DEG),VERT TAIL OFF,FLAPS UP FERRY,ALPHA1=6(S=-2)

TOTAL

PAGE 606

CA5 K1 FO H15.1A

(PLUS. ORB TC5 AT38.3)(RGM105)

SYMBOL

○
□
◇
△
▽

MACH

.150
.300
.500
.600
.700

ALPHA1
ELV-1B
S1-2
S5-6

PARAMETRIC VALUES

6.000 STAB
.000 ELV-0B
.000 S3-4
.000 10RB

-2.000
3.000
.000
4.000

REFERENCE INFORMATION

SREF	5500.0000	SO, FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

ROLLING MOMENT COEFFICIENT, CSL, (STABILITY AXIS)

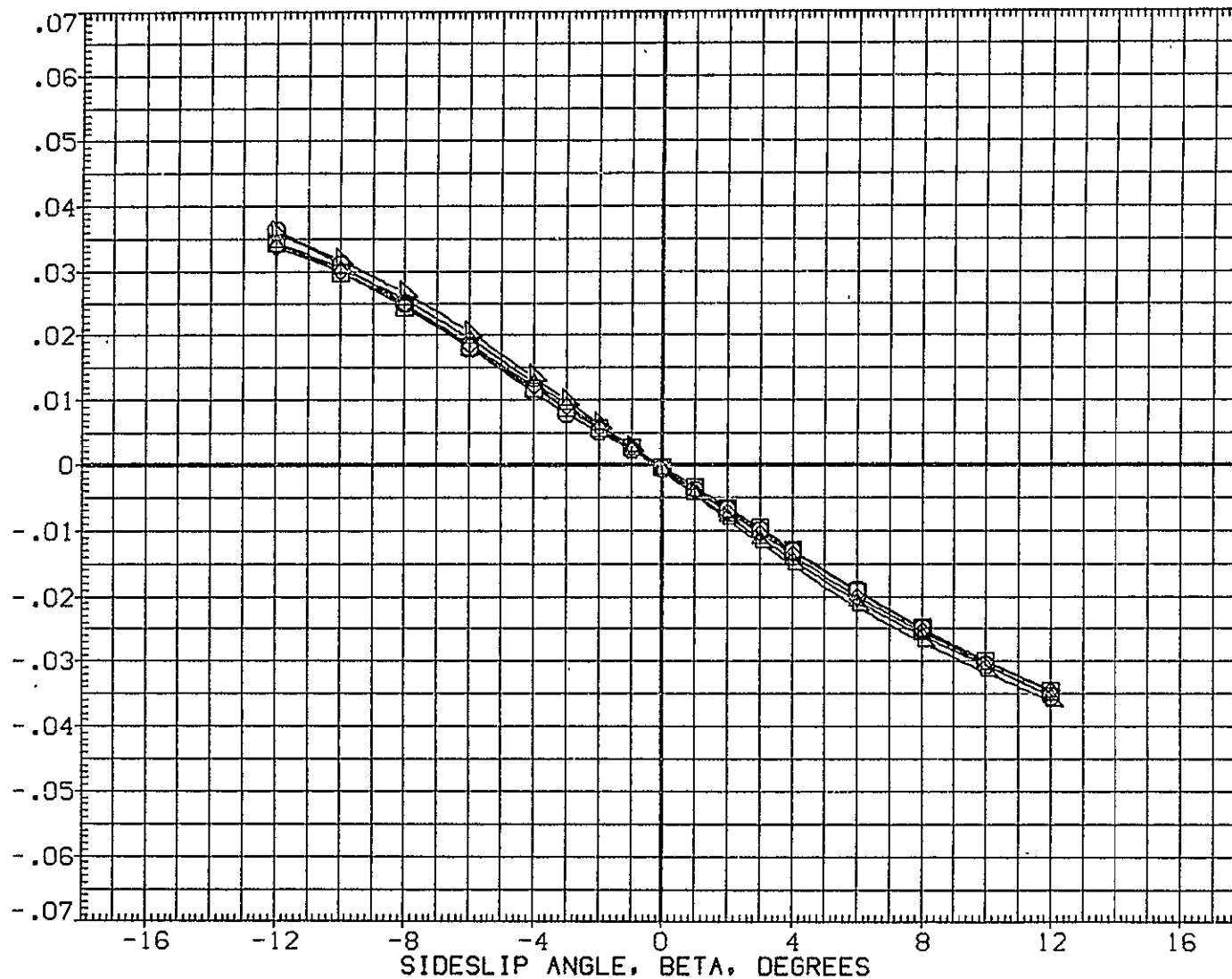


FIG.168 747+0RB(4 DEG), VERT TAIL OFF, FLAPS UP FERRY, ALPHA1=6(S=-2)

TOTAL

SYMBOL	MACH	PARAMETRIC VALUES
○	.150	ALPHA I 6.000 STAB -2.000
□	.300	ELV-1B .000 ELV-0B 3.000
◇	.500	S1-2 .000 S3-4 .000
△	.600	S5-6 .000 10RB 4.000
▽	.700	

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

INCREMENTAL SIDE FORCE COEFFICIENT (STABILITY AXIS), DCY

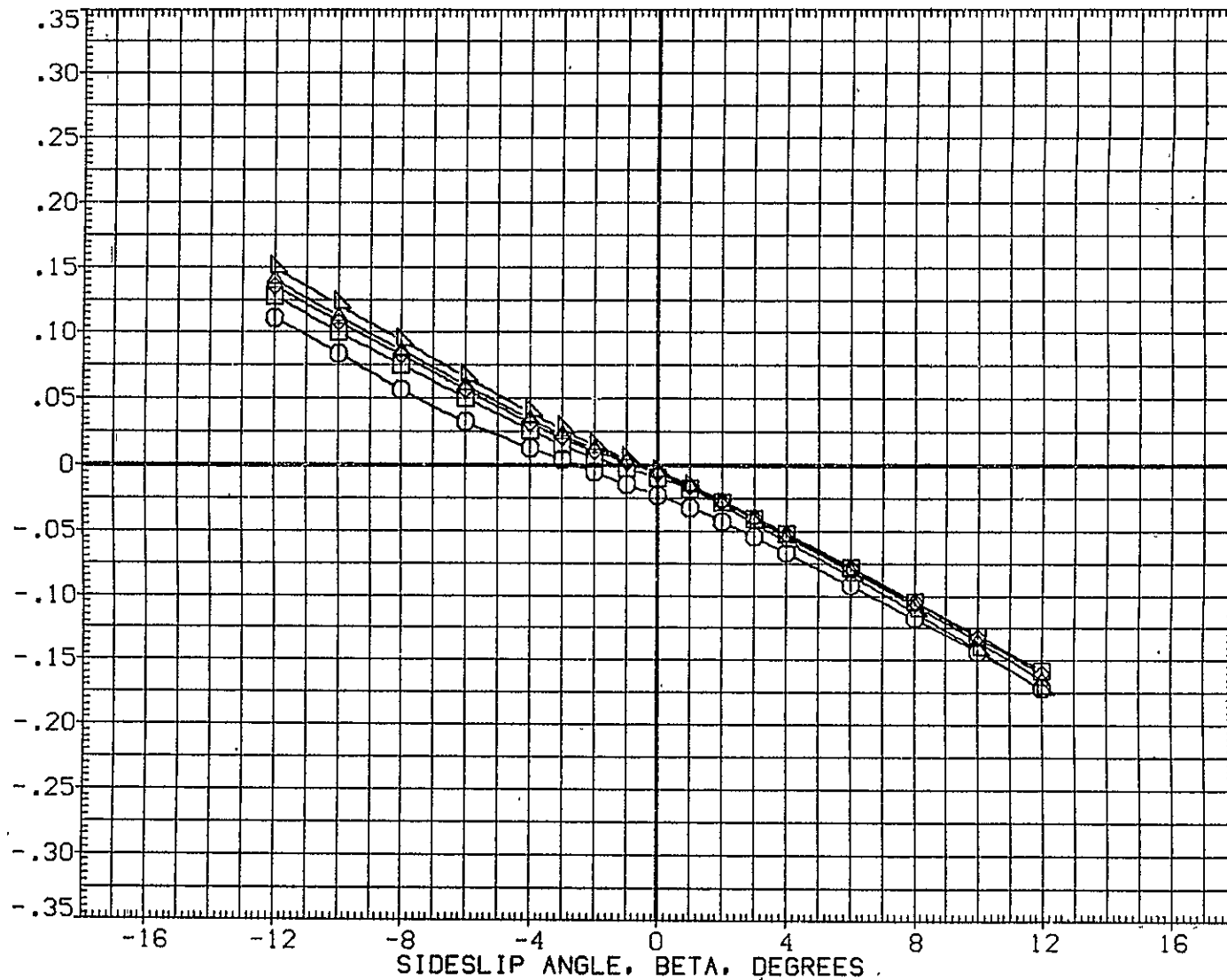


FIG.169 747+0RB(4 DEG), VERT TAIL OFF, FLAPS UP FERRY, ALPHA I=6 (S=-2)

747

CA5 K1 F0 H15.1A

MINUS ORB TC5 AT38.3 (BGM105)

SYMBOL
 ▽
 ◇
 □
 ○

MACH
 .150
 .300
 .500
 .600
 .700

ALPHA I
 ELV-1B
 S1-2
 S5-6

PARAMETRIC VALUES

6.000
 .000
 .000
 .000

STAB
 ELV-0B
 S3-4
 10RB

-2.000
 3.000
 .000
 4.000

REFERENCE INFORMATION

SREF	5500.0000	SQ.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

INCREMENTAL YAWING MOMENT COEFFICIENT (STABILITY AXIS), DCLN

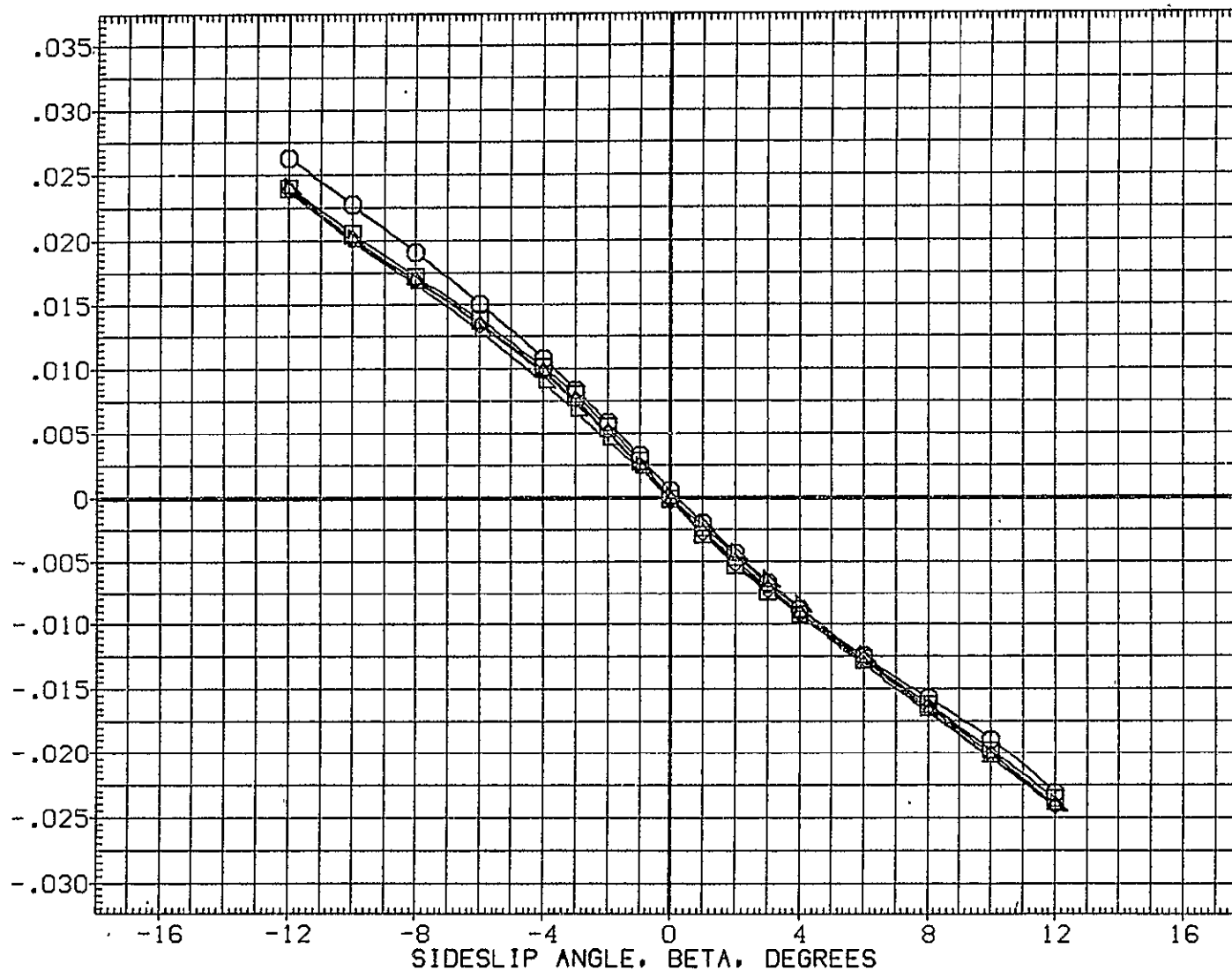


FIG.169 747+0RB(4 DEG), VERT TAIL OFF, FLAPS UP FERRY, ALPHA I=6(S=-2)

747

SYMBOL	MACH	PARAMETRIC VALUES
○	.150	ALPHA1 6.000 STAB -2.000
□	.300	ELV-1B .000 ELV-0B 3.000
◇	.500	S1-2 .000 S3-4 .000
△	.600	S5-6 .000 10RB 4.000
▽	.700	

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

INCREMENTAL ROLLING MOMENT COEFFICIENT(STABILITY AXIS), DCSL

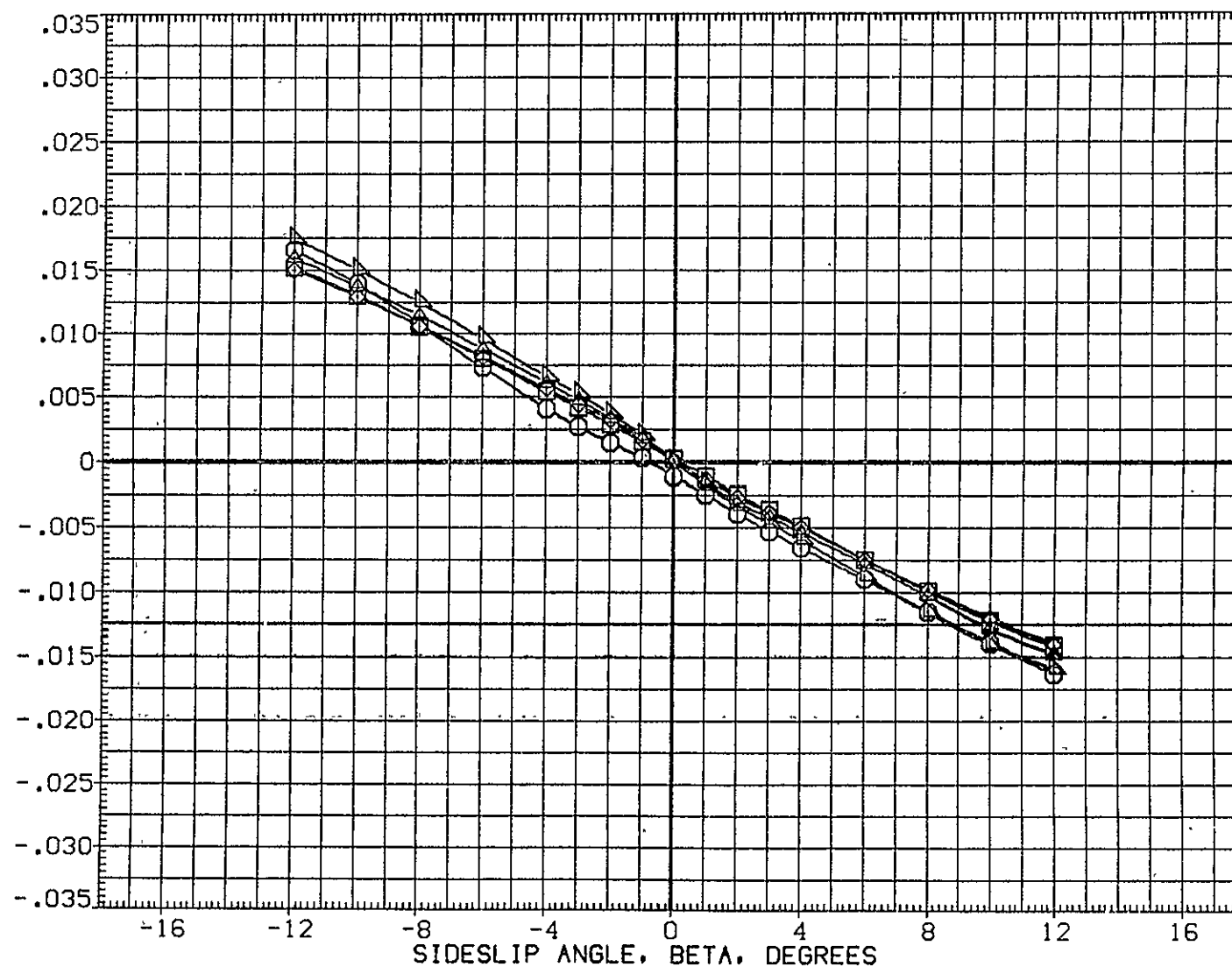


FIG.169 747+0RB(4 DEG), VERT TAIL OFF, FLAPS UP FERRY, ALPHA1=6(S=-2)

747

CA5 0RB TC5 AT38.3 (PRES. K1 F0 H15.1A

(XGM105)

SYMBOL

○
□
◇
△
▽

MACH

.150
.300
.500
.601
.701

PARAMETRIC VALUES

ALPHA1 6.000 STAB -2.000
ELV-1B .000 ELV-0B 3.000
SI-2 .000 S3-4 .000
SS-6 .000 10RB 4.000

REFERENCE INFORMATION

SREF 2690.0000 SQ.FT.
LREF 474.8100 IN.
BREF 936.6800 IN.
XMRP 1109.0000 IN. X0
YMRP .0000 IN. Y0
ZMRP 375.0000 IN. Z0
SCALE .0300

SIDE FORCE COEFFICIENT, CY

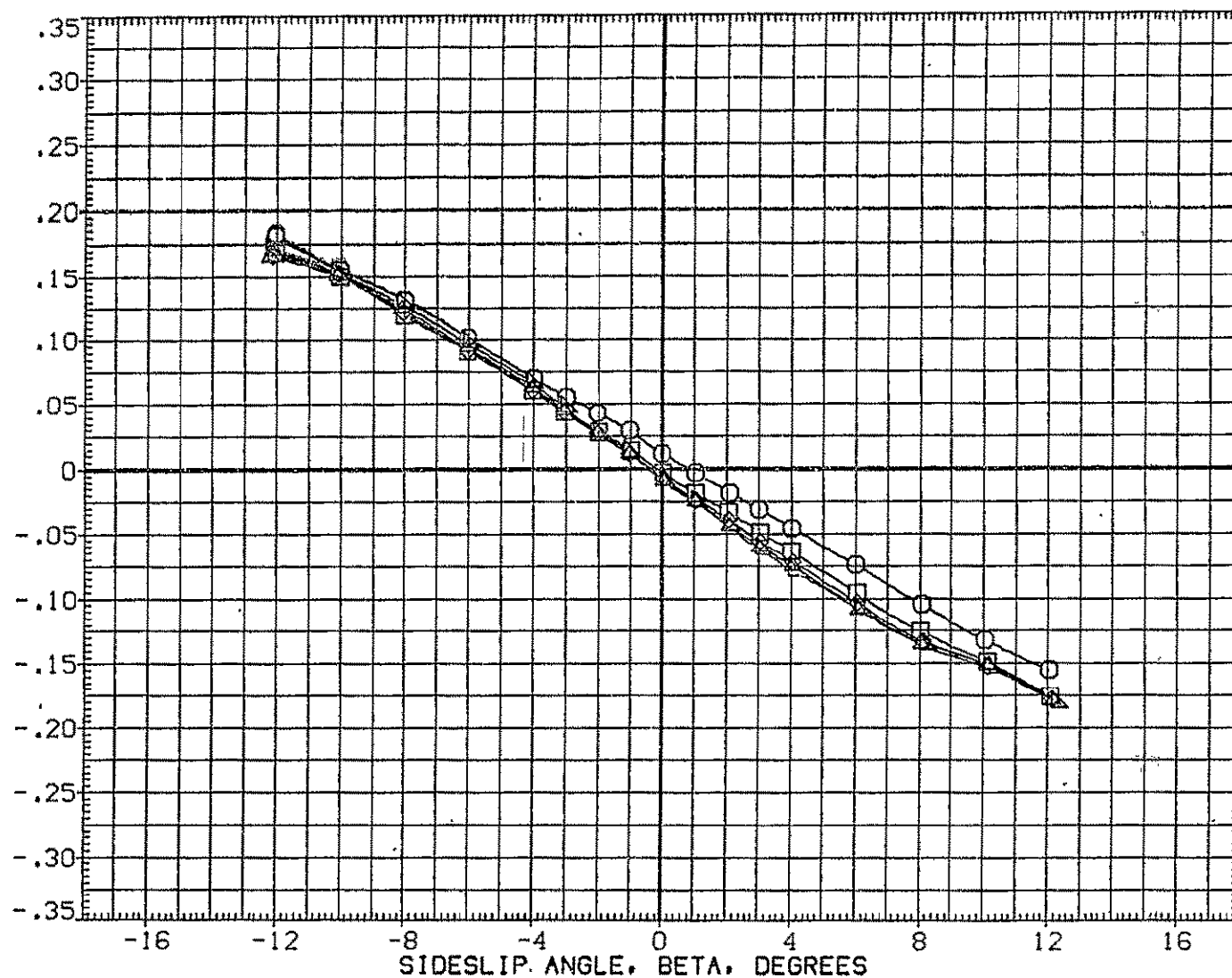


FIG.170 747+0RB(4 DEG), VERT TAIL OFF, FLAPS UP FERRY, ALPHA1=6(S=-2)

0RB

SYMBOL	MACH	PARAMETRIC VALUES
○	.150	ALPHA1 6.000 STAB -2.000
□	.300	ELV-1B .000 ELV-OB 3.000
◇	.500	S1-2 .000 S3-4 .000
△	.601	S5-6 .000 10RB 4.000
▽	.701	

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN. X0
YMRP	.0000	IN. Y0
ZMRP	375.0000	IN. Z0
SCALE	.0300	

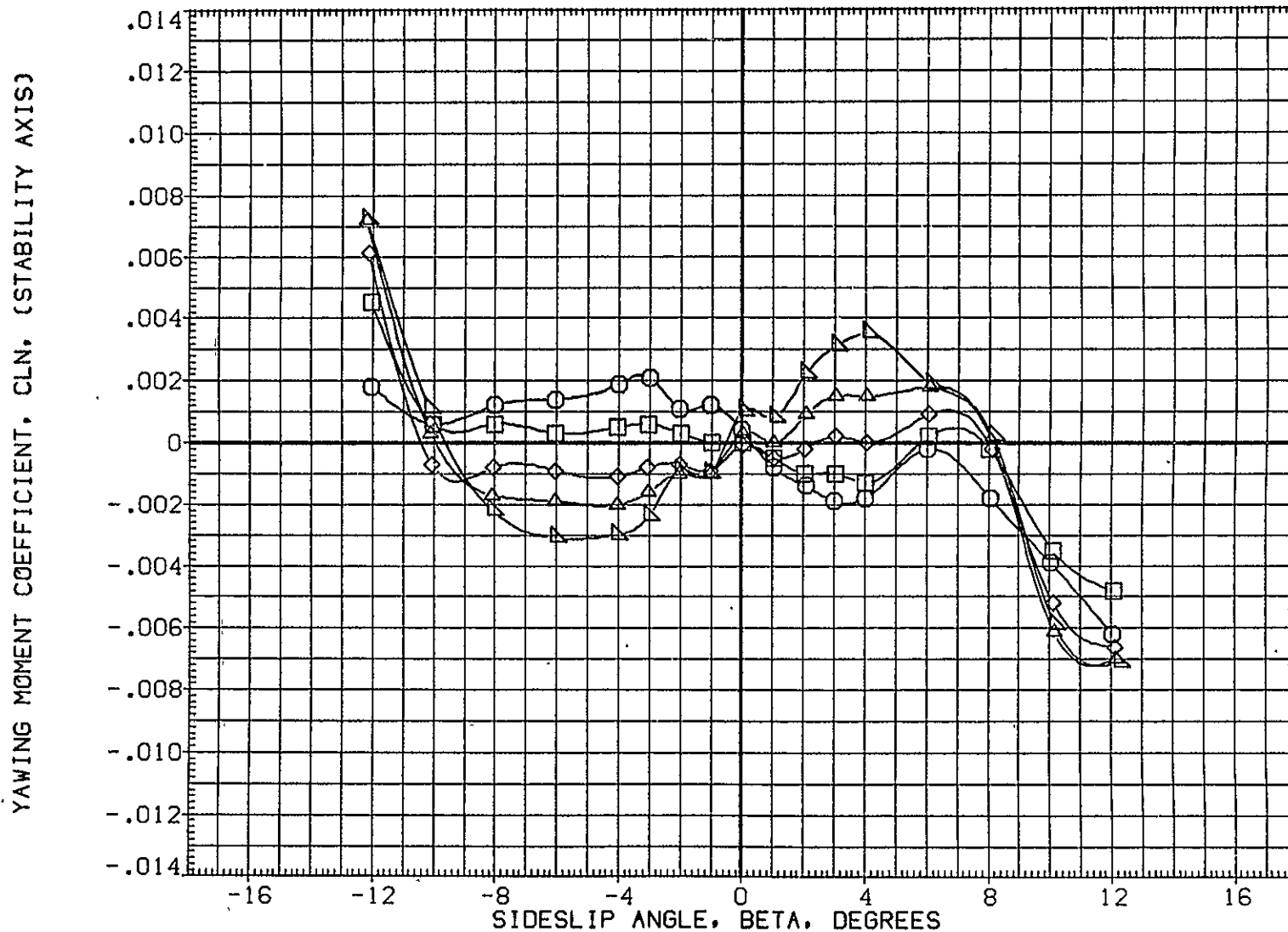


FIG.170 747+ORB(4 DEG),VERT TAIL OFF,FLAPS UP FERRY,ALPHA1=6(S=-2)

ORB

CA5 ORB TC5 AT38.3 (PRES. K1 FO H15.1A

(XGM105)

SYMBOL

○
□
◇
△
▽

MACH

ALPHA1

PARAMETRIC VALUES

6.000 STAB

-2.000

ELV-1B

.000 ELV-0B

3.000

S1-2

.000 S3-4

.000

S5-6

.000 ICRB

4.000

.701

REFERENCE INFORMATION

SREF 2690.0000 SQ.FT.

LREF 474.8100 IN.

BREF -936.6800 IN.

XMRP 1109.0000 IN. X0

YMRP .0000 IN. Y0

ZMRP 375.0000 IN. Z0

SCALE .0300

ROLLING MOMENT COEFFICIENT, CSL, (STABILITY AXIS)

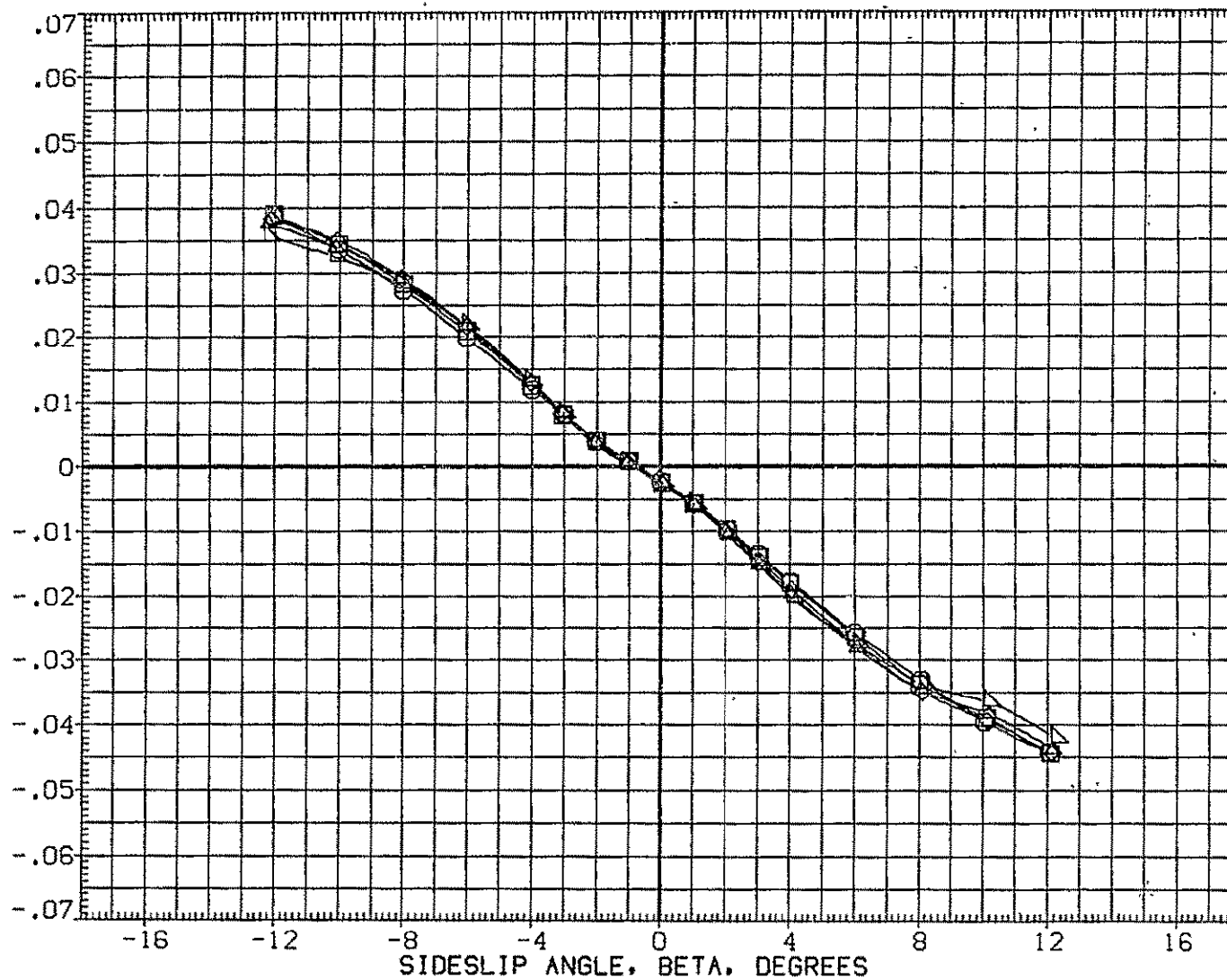


FIG.170 747+ORB(4 DEG), VERT TAIL OFF, FLAPS UP FERRY, ALPHA1=6(S=-2)

ORB

SYMBOL	MACH	PARAMETRIC VALUES
○	.300	ALPHA1 8.000 STAB -2.000
□	.500	ELV-1B .000 ELV-0B 3.000
◇	.600	S1-2 .000 S3-4 .000
△	.700	S5-6 .000 10RB 4.000

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XM RP	1339.9100	IN. XC
YM RP	.0000	IN. YC
ZM RP	190.7500	IN. YC
SCALE	.0300	

SIDE FORCE COEFFICIENT, CY

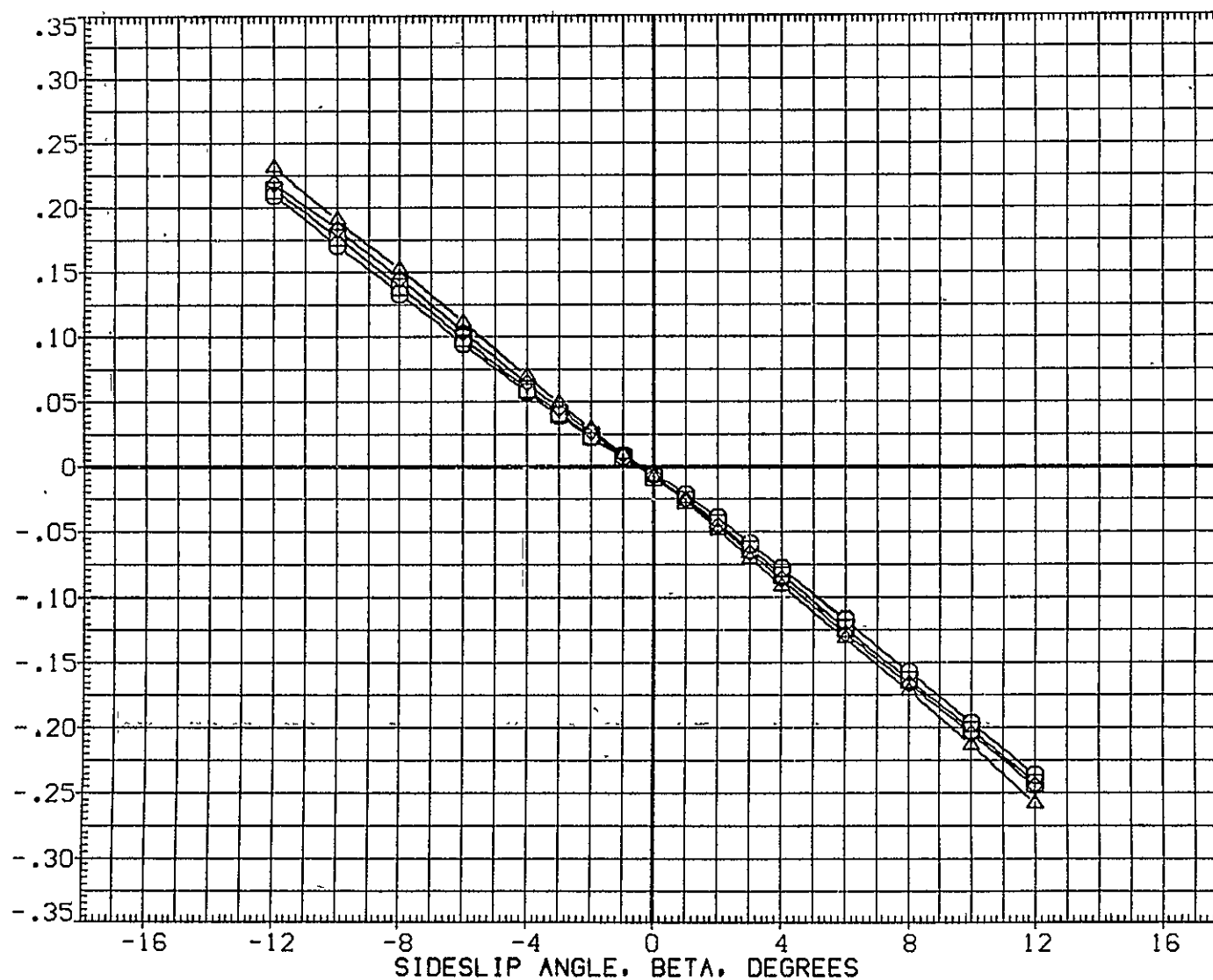


FIG.171 747+0RB(4 DEG),BASIC TAIL,FLAPS UP FERRY,ALPHA1=8(S=-2)

TOTAL

CA5 K1 F0 H15.1A

(PLUS. ORB TC5 AT38.3)(RGM106)

SYMBOL	MACH	ALPHA1	PARAMETRIC VALUES	STAB	
○	.300		8.000	-2.000	
□	.500	ELV-1B	.000	ELV-0B	3.000
◇	.600	S1-2	.000	S3-4	.000
△	.700	S5-6	.000	10RB	4.000

REFERENCE INFORMATION		
SREF	5500.0000	SO, FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

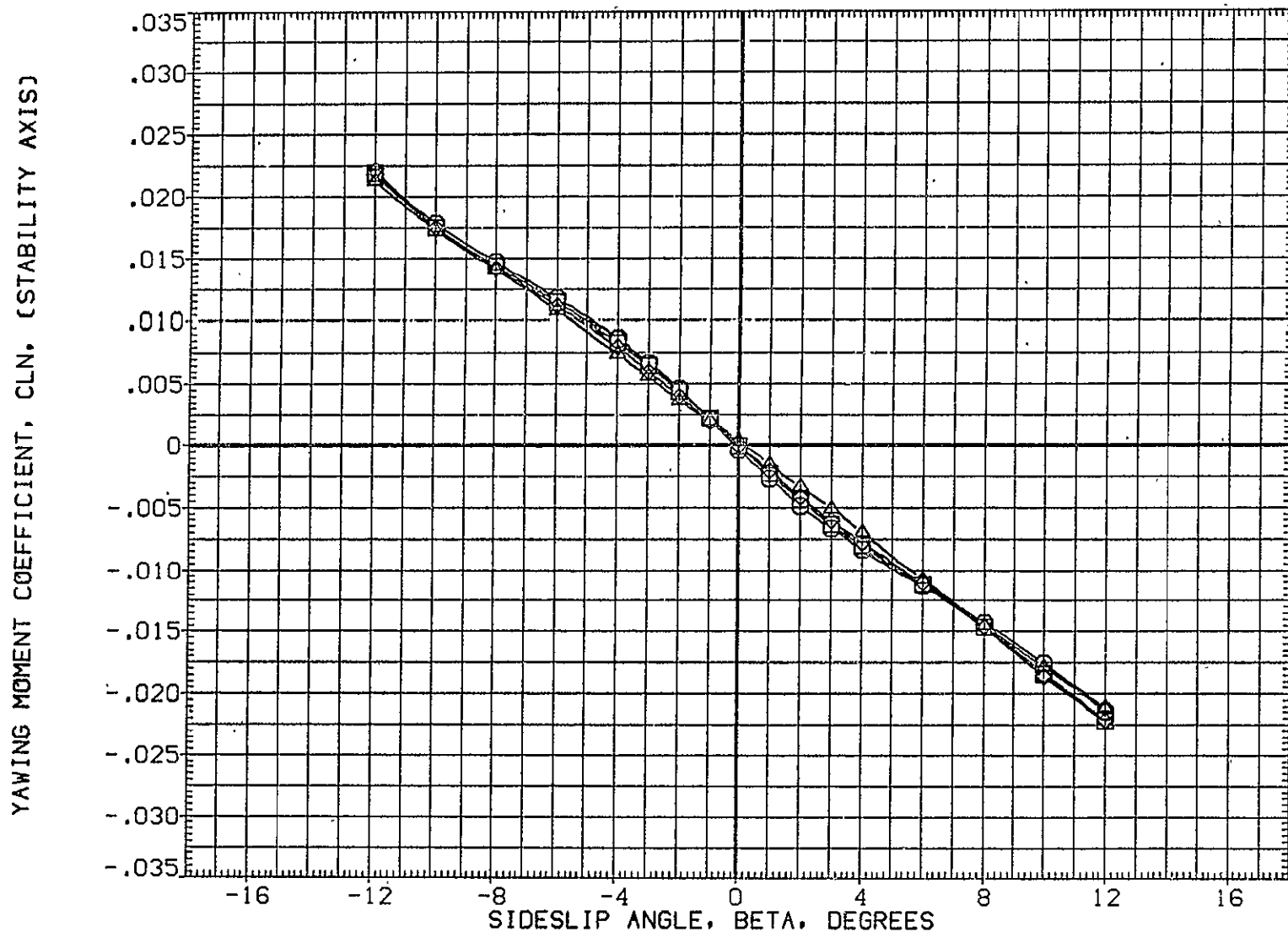


FIG.171 747+ORB(4 DEG),BASIC TAIL,FLAPS UP FERRY,ALPHA1=8(S=-2)

TOTAL

CA5 K1 FO H15.1A

(PLUS. 0RB TC5 AT38.3)(RGM106)

SYMBOL

○
□
◇
△

MACH

.300
.500
.600
.700ALPHA1
ELV-1B
S1-2
S5-6

PARAMETRIC VALUES

8.000
.000
.000
.000STAB
ELV-0B
S3-4
10RB-2.000
3.000
.000
4.000

REFERENCE INFORMATION

SREF	5500.0000	SQ.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

ROLLING MOMENT COEFFICIENT, CSL, (STABILITY AXIS)

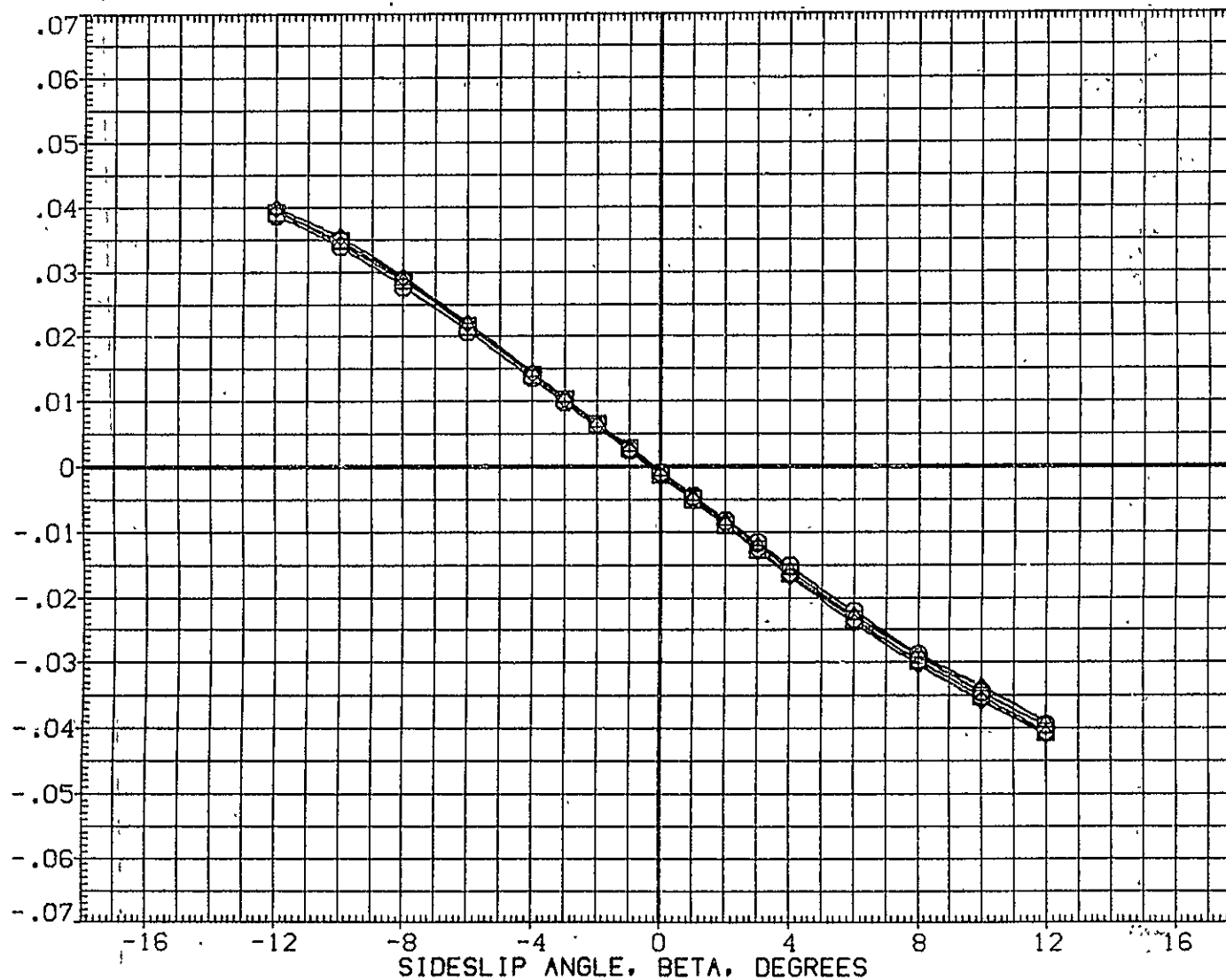


FIG.171 747+0RB(4 DEG),BASIC TAIL,FLAPS UP FERRY,ALPHA1=8(S=-2)

TOTAL

CA5 K1 F0 H15.1A

MINUS ORB TC5 AT38.3 (BGM106)

SYMBOL	MACH	PARAMETRIC VALUES
○	.300	ALPHA1 8.000 STAB -2.000
□	.500	ELV-1B .000 ELV-0B 3.000
◇	.600	S1-2 .000 S3-4 .000
△	.700	S5-6 .000 IORB 4.000

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XM RP	1339.9100	IN. XC
YM RP	.0000	IN. YC
ZM RP	190.7500	IN. ZC
SCALE	.0300	

INCREMENTAL SIDE FORCE COEFFICIENT(STABILITY AXIS), DCY

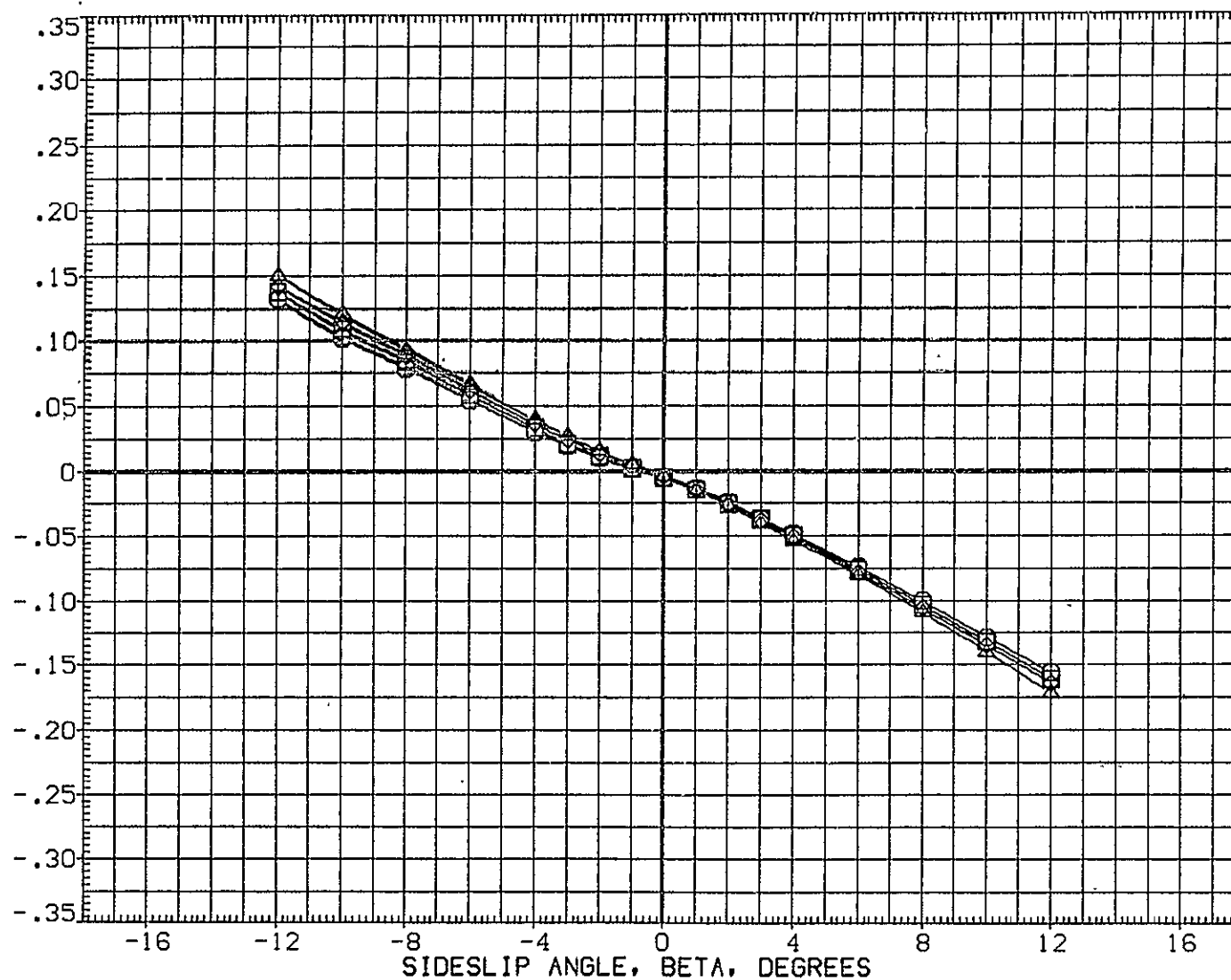


FIG.172 747+ORB(4 DEG),BASIC TAIL,FLAPS UP FERRY,ALPHA1=8(S=-2)

747

SYMBOL	MACH	PARAMETRIC VALUES
○	.300	ALPHA1 8.000 STAB -2.000
□	.500	ELV-1B .000 ELV-0B 3.000
◇	.600	SF-2 .000 S3-4 .000
△	.700	S5-6 .000 10RB 4.000

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

INCREMENTAL YAWING MOMENT COEFFICIENT(STABILITY AXIS), DCLN

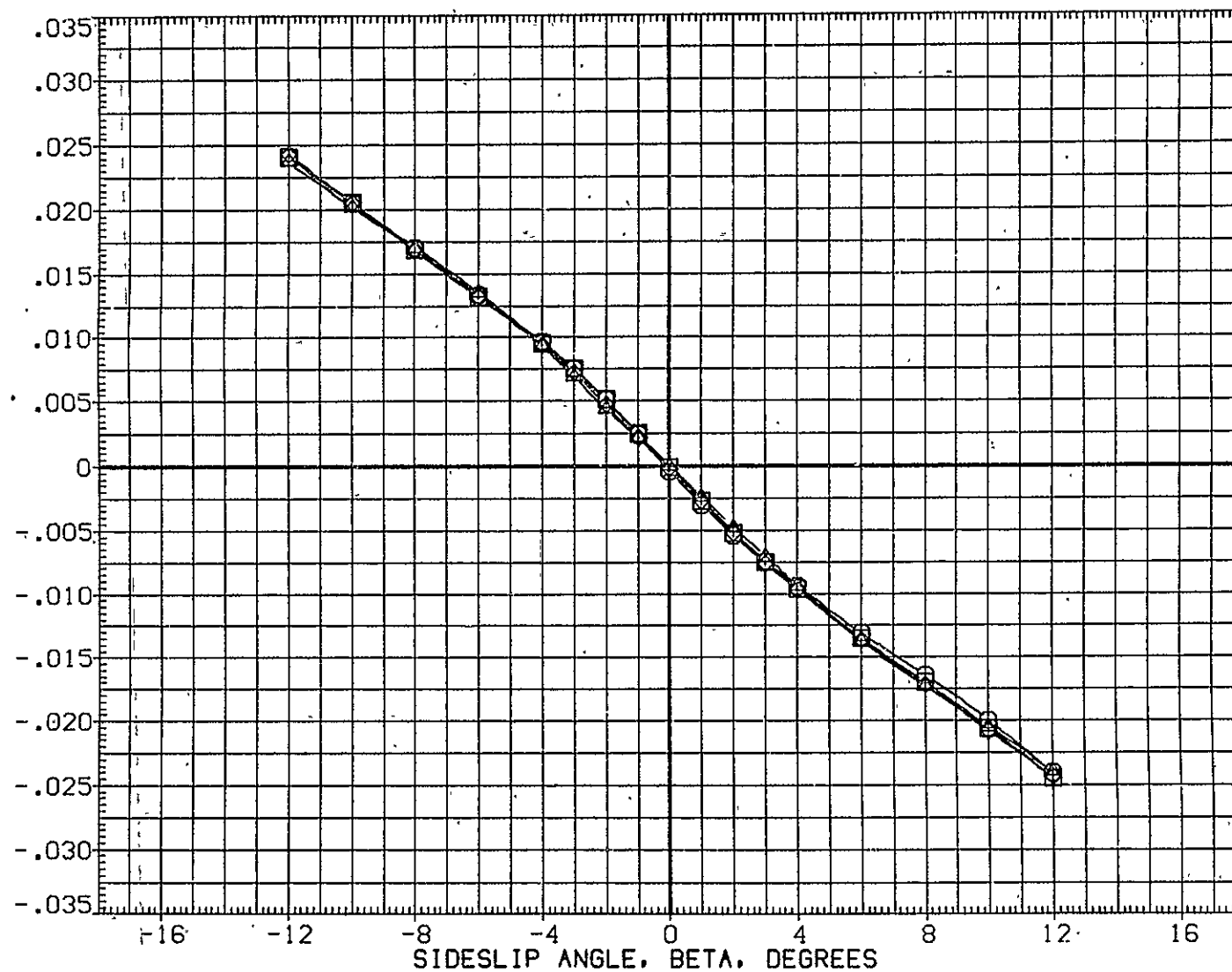


FIG.172 747+0RB(4 DEG),BASIC TAIL,FLAPS UP FERRY,ALPHA1=8(S=-2)

747

CA5 K1 F0 H15.1A

MINUS ORB TC5 AT38.3 (BGM106)

SYMBOL MACH PARAMETRIC VALUES

○	.300	ALPHA1	8.000	STAB	-2.000
□	.500	ELV-1B	.000	ELV-OB	3.000
◇	.600	S1-2	.000	S3-4	.000
△	.700	.000	ICRB	4.000	

REFERENCE INFORMATION

SREF	5500.0000	SQ.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XM RP	1339.9100	IN. XC
YM RP	.0000	IN. YC
ZM RP	190.7500	IN. ZC
SCALE	.0300	

INCREMENTAL ROLLING MOMENT COEFFICIENT(STABILITY AXIS), DCSL

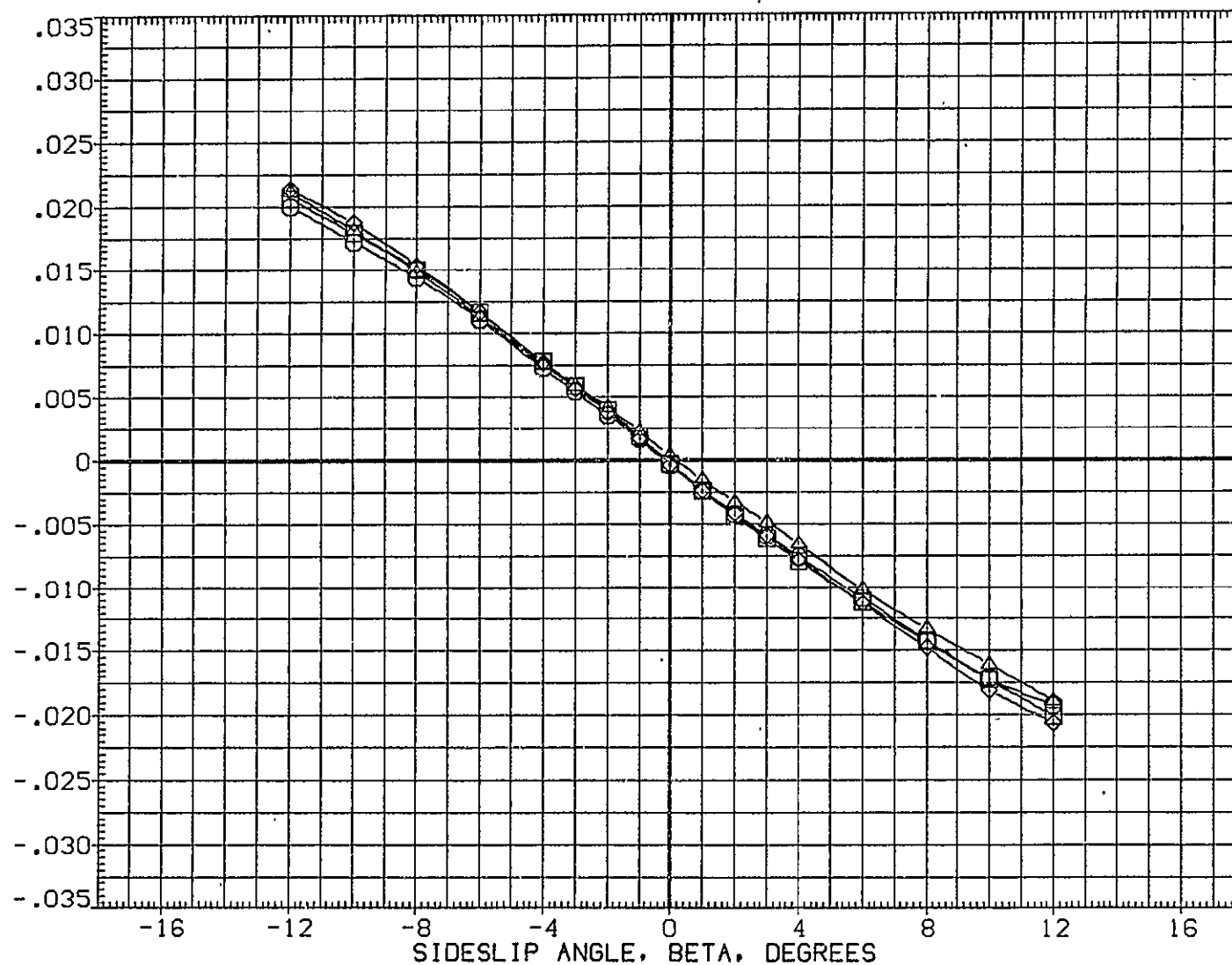


FIG.172 747+ORB(4 DEG),BASIC TAIL,FLAPS UP FERRY,ALPHA1=8(S=-2)

747

SYMBOL	MACH	PARAMETRIC VALUES
○	.299	ALPHA1 8.000 STAB -2.000
□	.499	ELV-1B .000 ELV-OB 3.000
◇	.600	S1-2 .000 S3-4 .000
△	.700	S5-6 .000 10RB 4.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN. X0
YMRP	.0000	IN. Y0
ZMRP	375.0000	IN. Z0
SCALE	.0300	

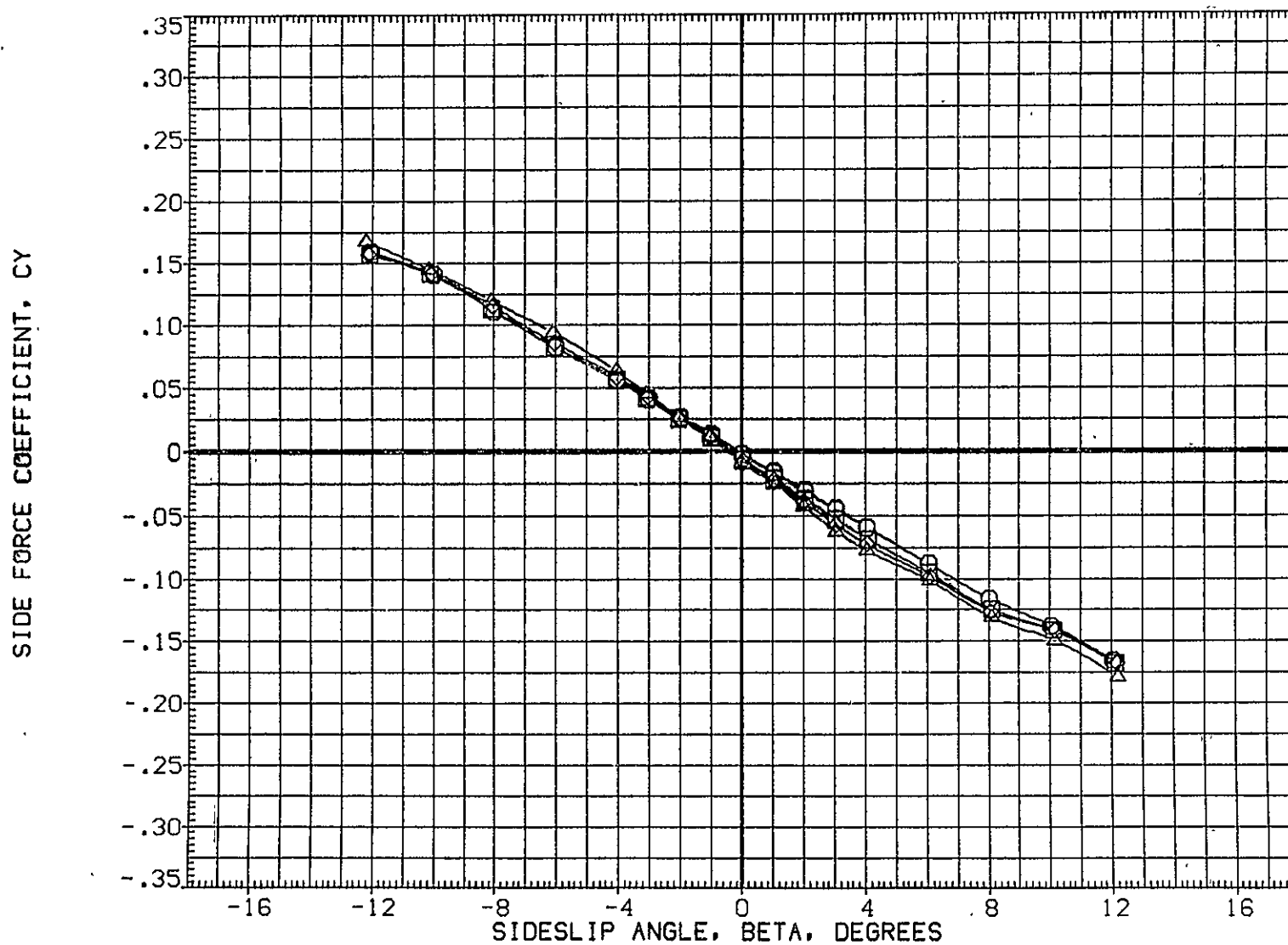


FIG.173 747+ORB(4 DEG),BASIC TAIL,FLAPS UP FERRY,ALPHA1=8(S=-2)

ORB

CA5 ORB TC5 AT38.3 (PRES. K1 FO H15.1A

(XGM106)

SYMBOL	MACH	PARAMETRIC VALUES
○	.299	ALPHA1 8.000 STAB -2.000
□	.499	ELV-1B .000 ELV-0B 3.000
◇	.600	S1-2 .000 S3-4 .000
△	.700	S5-6 .000 10RB 4.000

REFERENCE INFORMATION		
SREF	2690.0000	SG.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN. X0
YMRP	.0000	IN. Y0
ZMRP	375.0000	IN. Z0
SCALE	.0300	

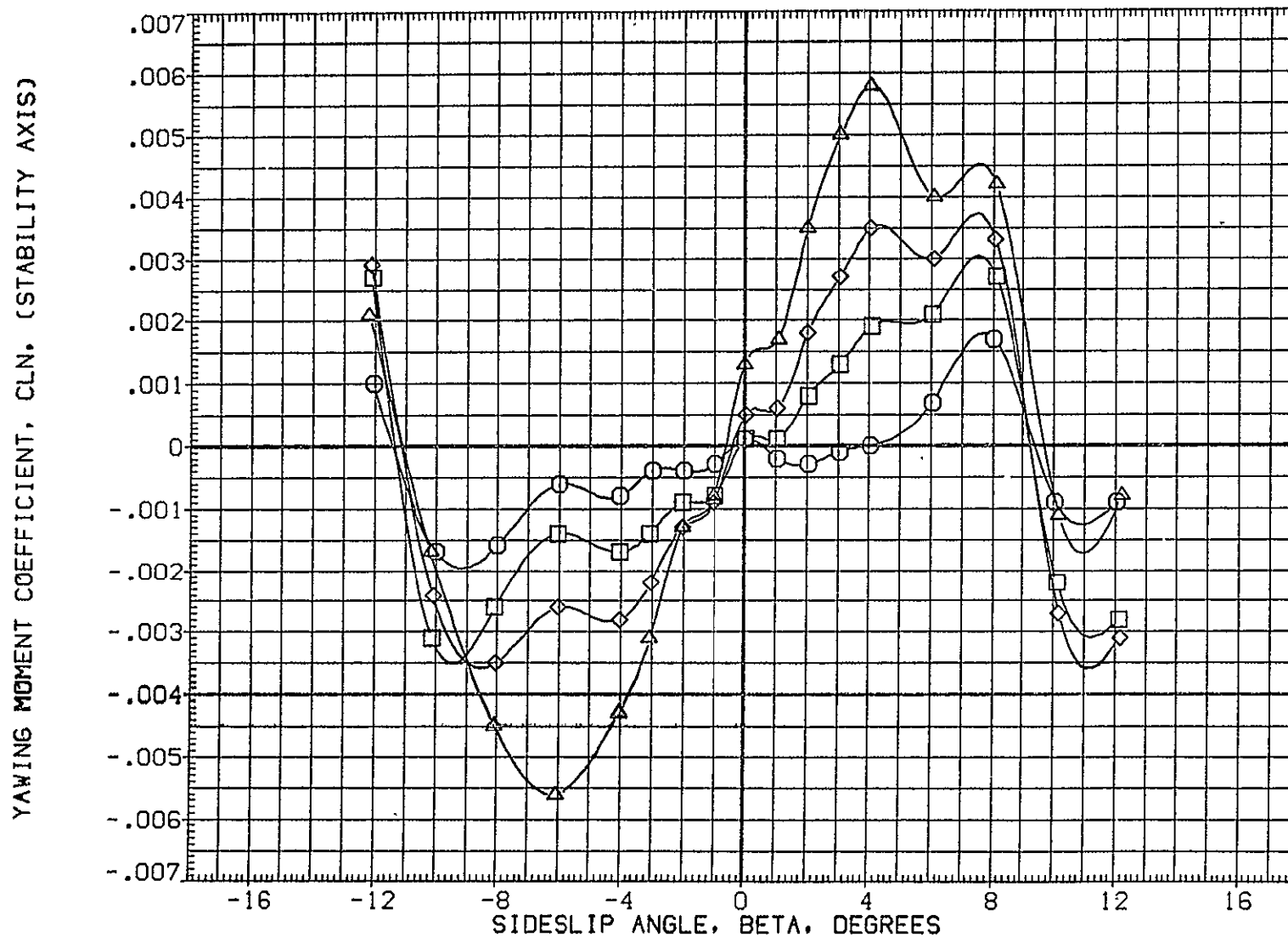


FIG.173 747+0RB(4 DEG),BASIC TAIL,FLAPS UP FERRY,ALPHA1=8(S=-2)

ORB

SYMBOL	MACH	PARAMETRIC VALUES
○	.299	ALPHA1 8.000 STAB -2.000
□	.499	ELV-1B .000 ELV-0B 3.000
◇	.600	S1-2 .000 S3-4 .000
△	.700	S5-6 .000 10RB 4.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN. X0
YMRP	.0000	IN. Y0
ZMRP	375.0000	IN. Z0
SCALE	.0300	

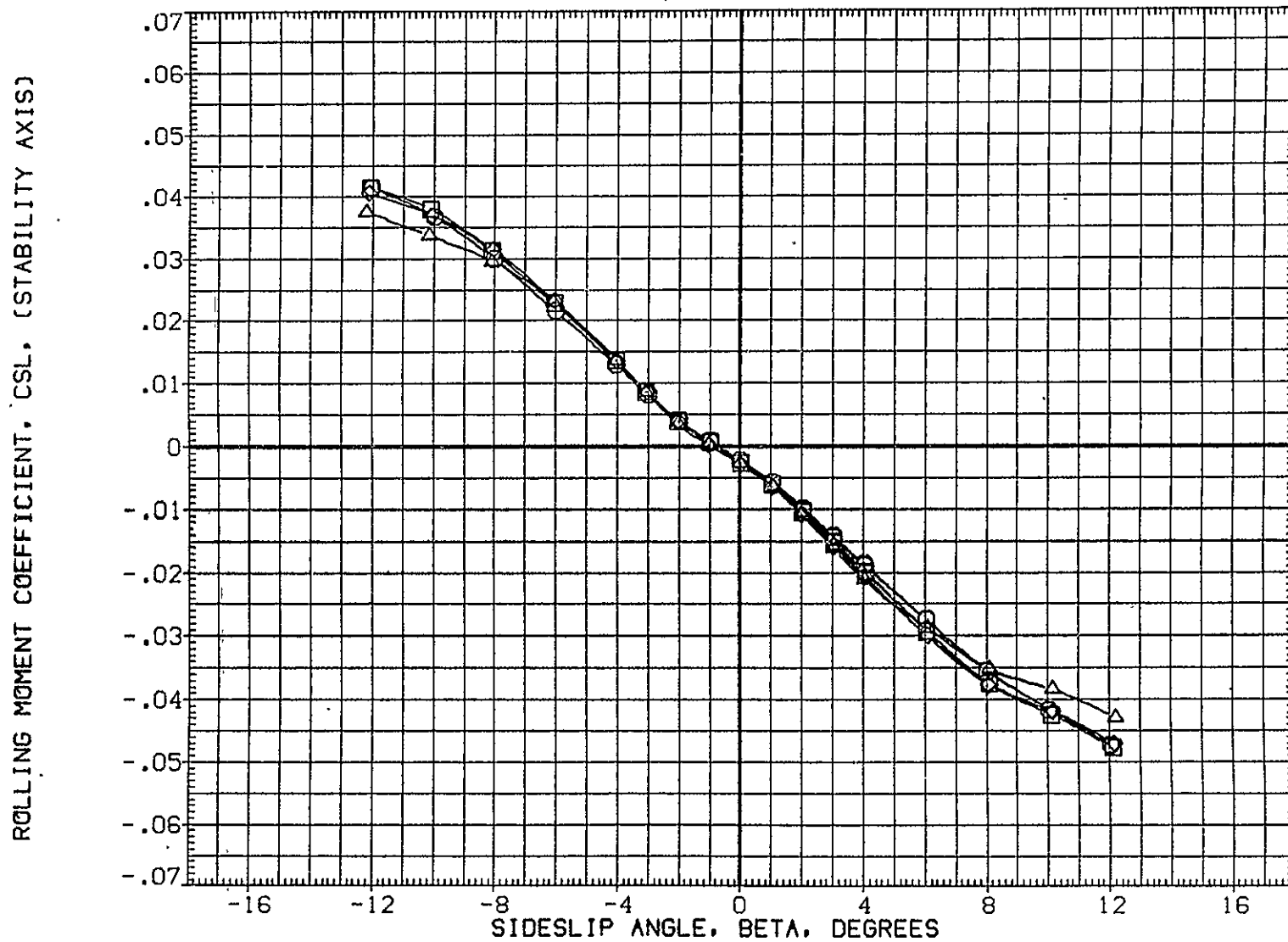


FIG.173 747+ORB(4 DEG),BASIC TAIL,FLAPS UP FERRY,ALPHA1=8(S=-2)

ORB

CA5 K1 F0 H15.1A V9.1 (PLUS. 0RB TC5 AT38.3)(RGM109)

SYMBOL

○
□
◇
△

MACH

.300
.500
.600
.700

ALPHA1
RUD-U
ELV-1B
S1-2
S5-6

PARAMETRIC VALUES

2.000 STAB -3.200
.000 RUD-L .000
.000 ELV-0B 3.000
.000 S3-4 .000
.000 10RB 4.000

REFERENCE INFORMATION

SREF 5500.0000 SQ.FT.
LREF 327.8000 IN.
BREF 2348.0000 IN.
XMRP 1339.9100 IN. XC
YMRP .0000 IN. YC
ZMRP 190.7500 IN. ZC
SCALE .0300

SIDE FORCE COEFFICIENT, CY

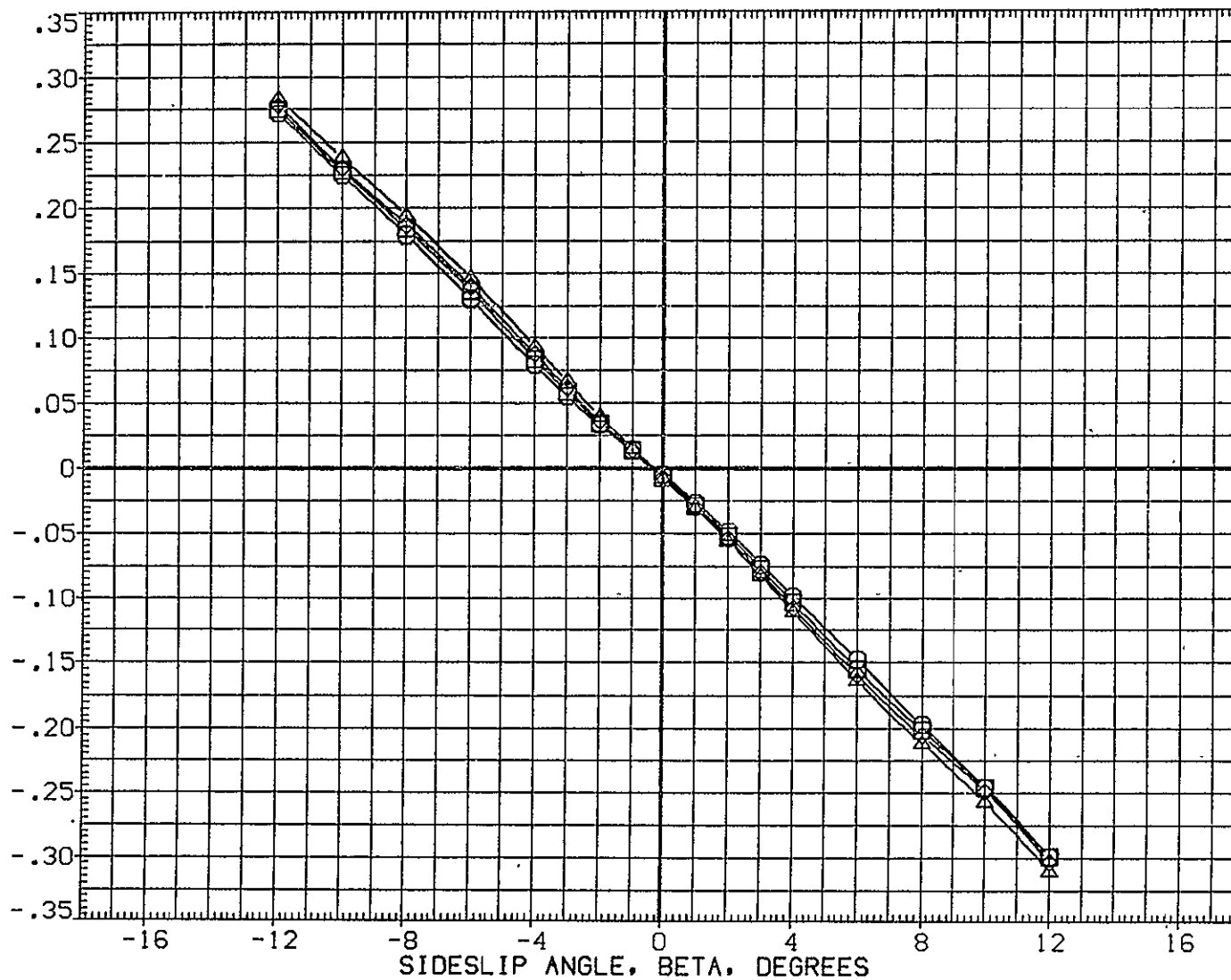


FIG.174 747+0RB(4 DEG),BASIC TAIL,FLAPS UP FERRY,ALPHA1=2(S=-3.2)

TOTAL

SYMBOL	MACH	PARAMETRIC VALUES
○	.300	ALPHA1 2.000 STAB -3.200
□	.500	RUD-U .000 RUD-L .000
◇	.600	ELV-1B .000 ELV-0B 3.000
△	.700	S1-2 .000 S3-4 .000
		S5-6 .000 10RB 4.000

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XM RP	1339.9100	IN. XC
YM RP	.0000	IN. YC
ZM RP	190.7500	IN. YC
SCALE	.0300	

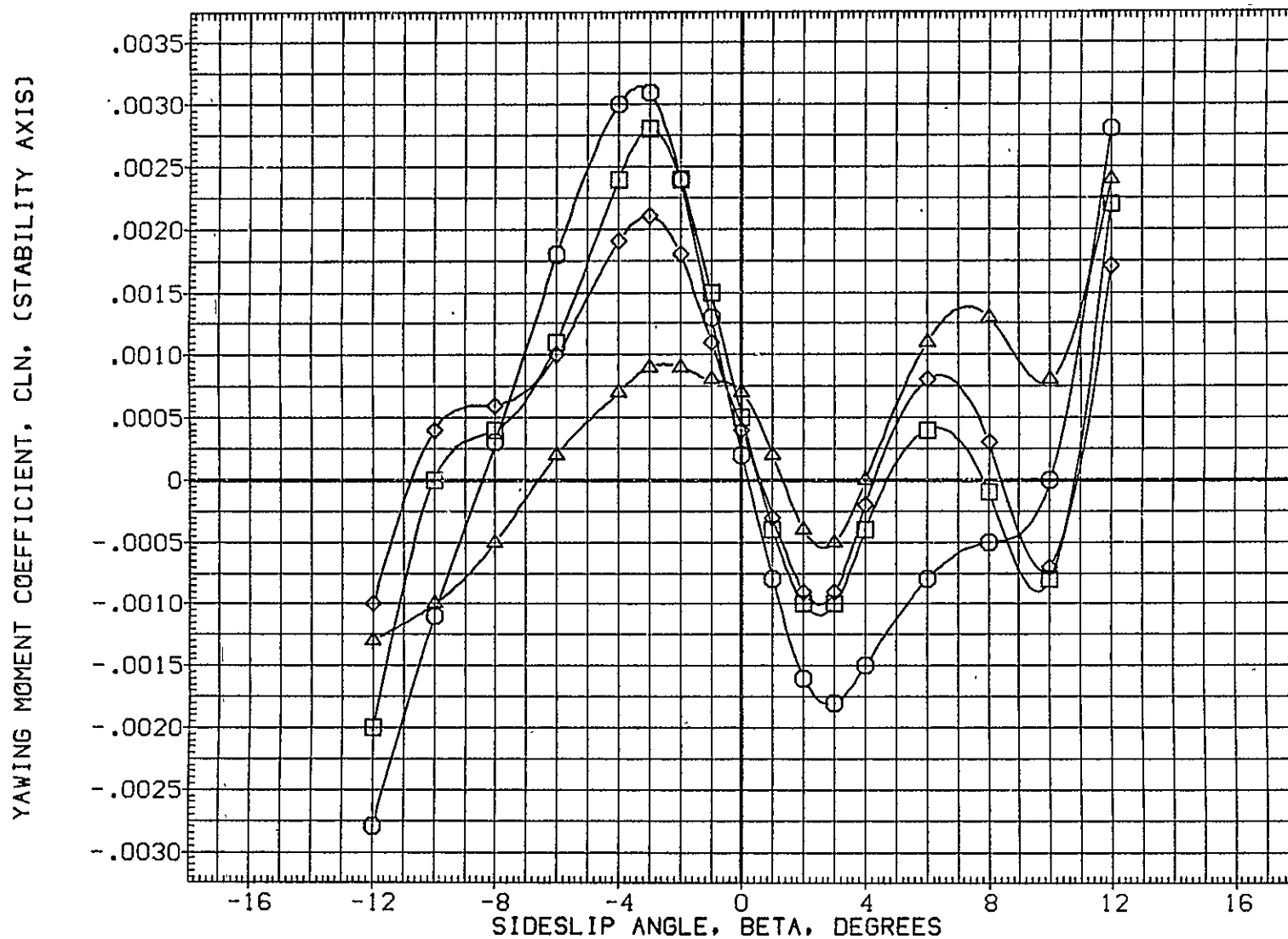


FIG.174 747+0RB(4 DEG),BASIC TAIL,FLAPS UP FERRY,ALPHA1=2(S=-3.2)

TOTAL

CA5 K1 FO H15.1A V9.1 (PLUS. ORB TC5 AT38.3)(RGM109)

SYMBOL	MACH	PARAMETRIC VALUES
○	.300	ALPHA1 2.000 STAB -3.200
□	.500	RUD-U .000 RUD-L .000
◇	.600	ELV-1B .000 ELV-OB 3.000
△	.700	S1-2 .000 S3-4 .000
		S5-6 .000 IORB 4.000

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

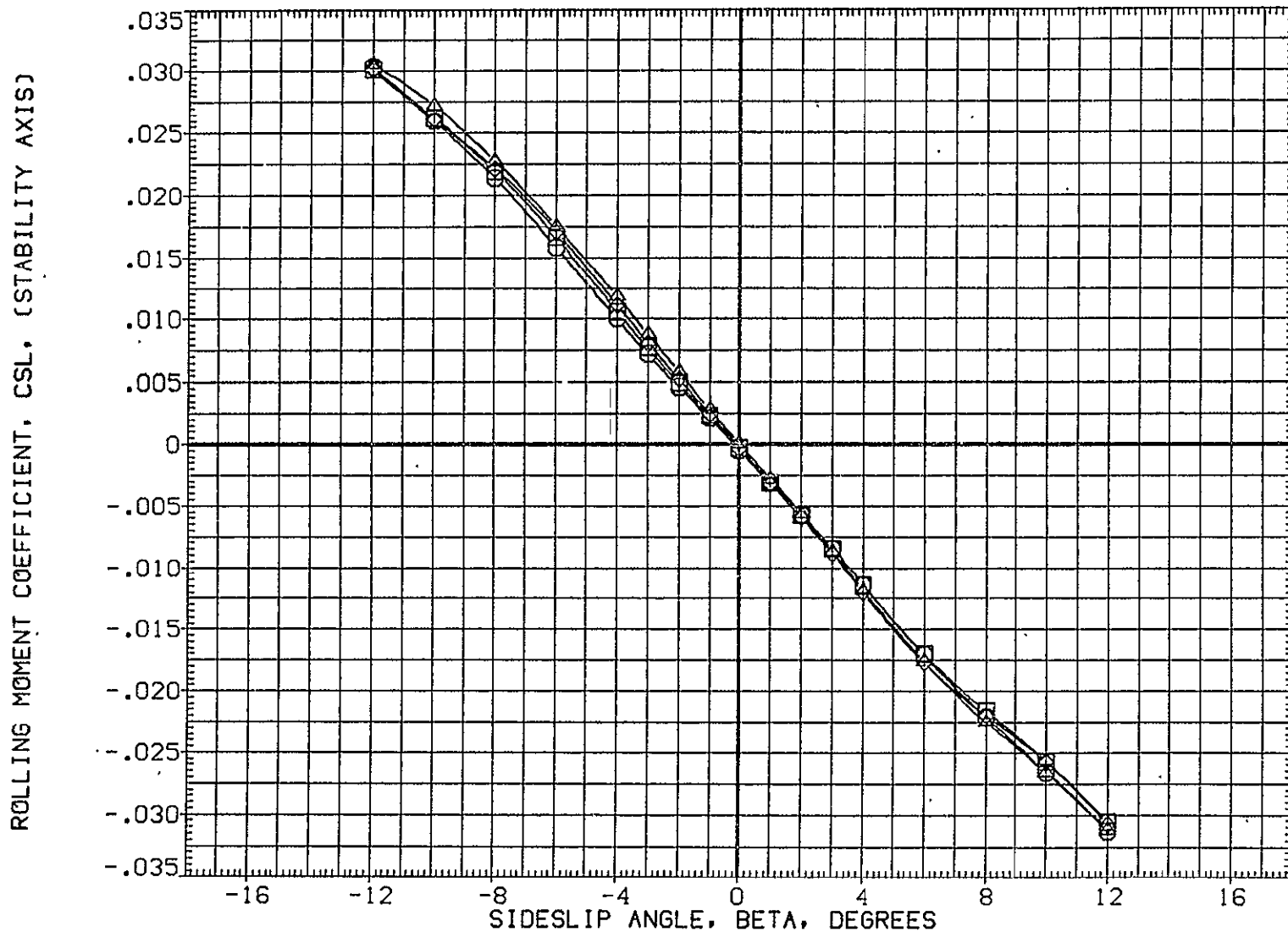


FIG.174 747+ORB(4 DEG),BASIC TAIL,FLAPS UP FERRY,ALPHA1=2(S=-3.2)

TOTAL

SYMBOL	MACH	PARAMETRIC VALUES	REFERENCE INFORMATION
○	.300	ALPHA I 2.000 STAB -3.200	SREF 5500.0000 SQ.FT.
□	.500	RUD-U .000 RUD-L .000	LREF 327.8000 IN.
◇	.600	ELV-1B .000 ELV-CB 3.000	BREF 2348.0000 IN.
△	.700	S1-2 .000 S3-4 .000	XMRP 1339.9100 IN. XC
		S5-6 .000 10RB 4.000	YMRP .0000 IN. YC
			ZMRP 190.7500 IN. ZC
			SCALE .0300

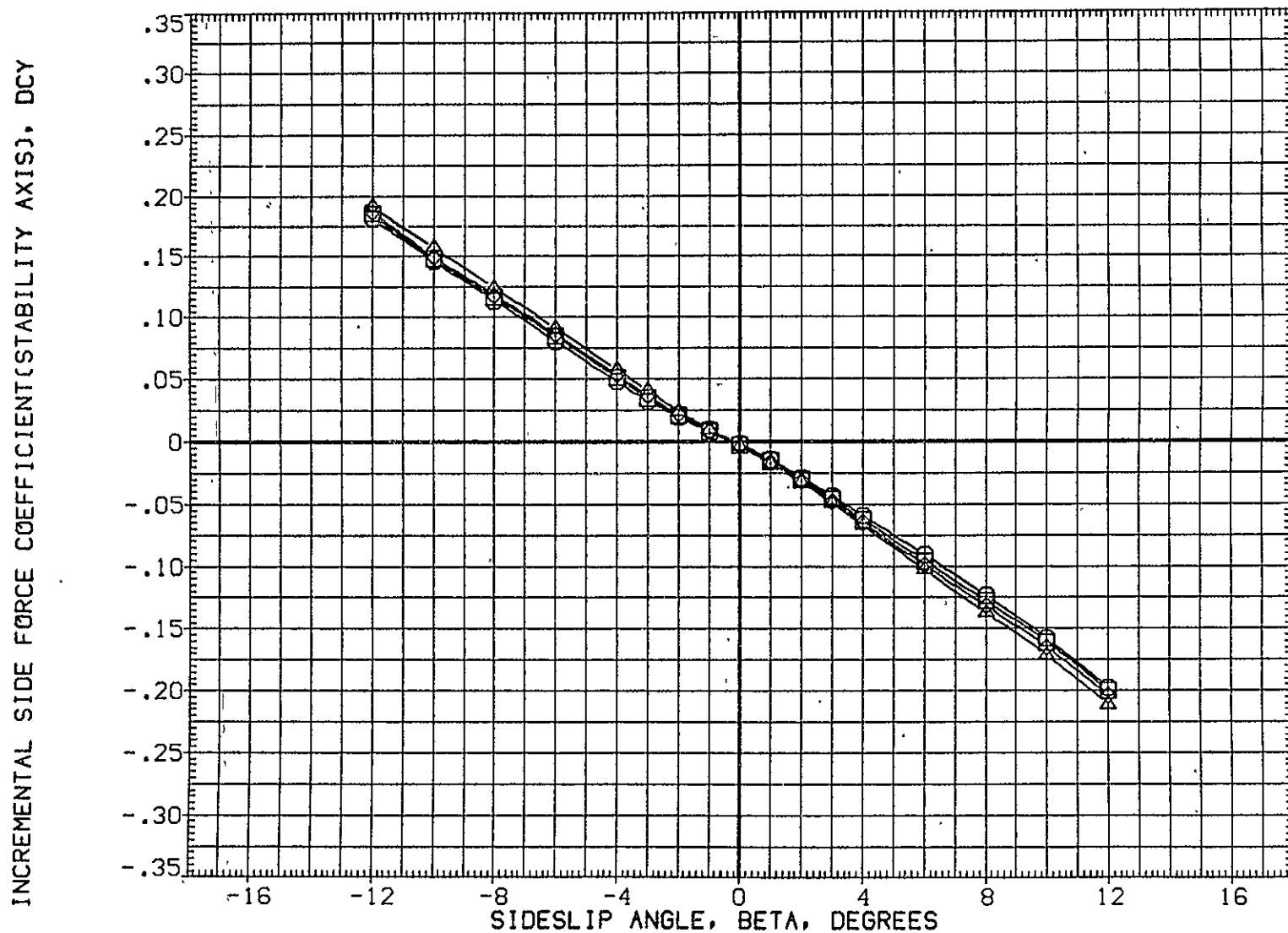


FIG.175 747+0RB(4 DEG),BASIC TAIL,FLAPS UP FERRY,ALPHA I=2(S=-3.2)

747

CA5 K1 F0 H15.1A V9.1 MINUS 0RB TC5 AT38.3 (BGM109)

SYMBOL MACH PARAMETRIC VALUES

○	.300	ALPHA1	2.000	STAB	-3.200
□	.500	RUD-U	.000	RUD-L	.000
◇	.600	ELV-1B	.000	ELV-0B	3.000
△	.700	S1-2	.000	S3-4	.000
		S5-6	.000	10RB	4.000

REFERENCE INFORMATION

SREF	5500.0000	SQ.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

INCREMENTAL YAWING MOMENT COEFFICIENT(STABILITY AXIS), DCLN

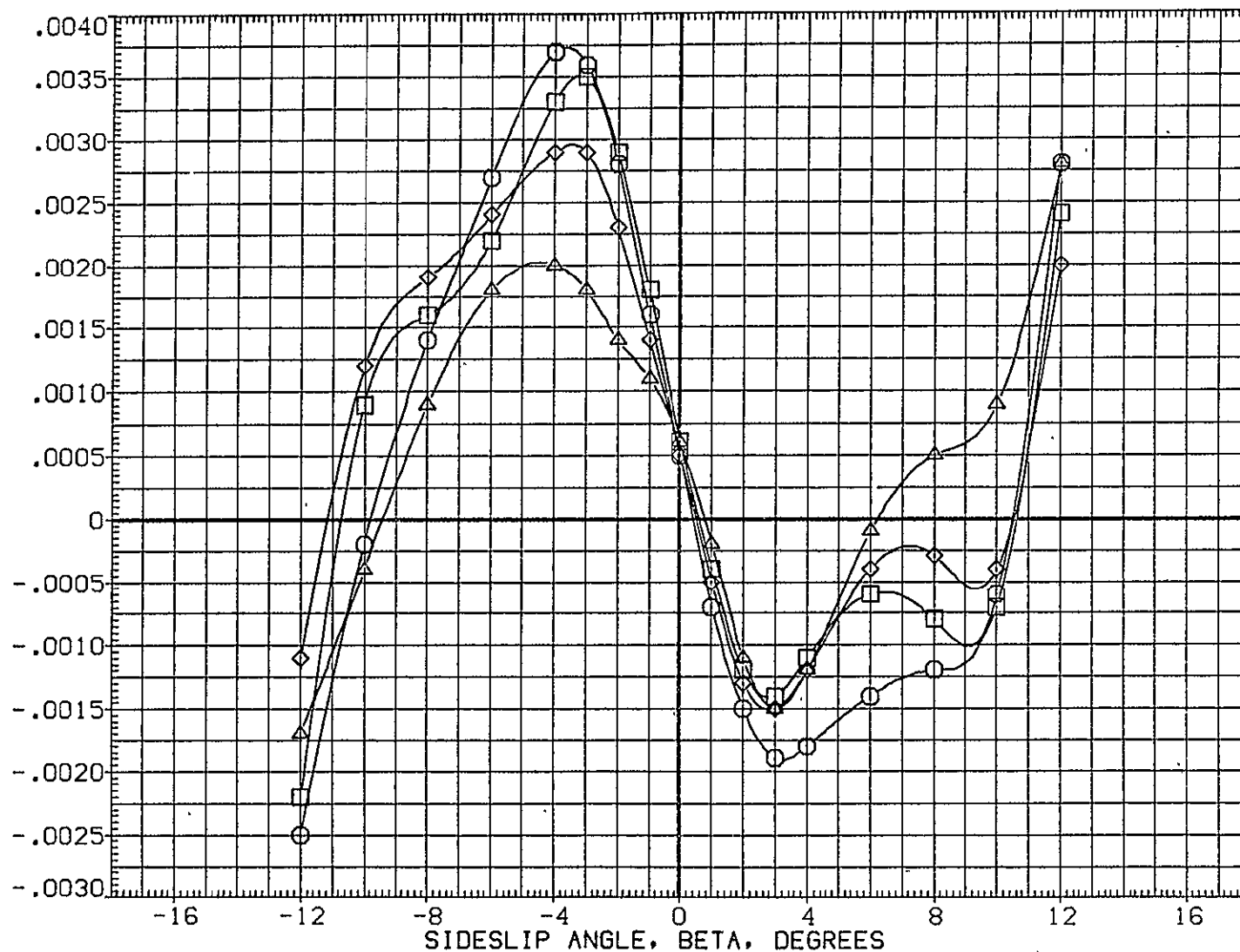


FIG.175 747+0RB(4 DEG),BASIC TAIL,FLAPS UP FERRY,ALPHA1=2(S=-3.2)

747

SYMBOL

○
□
◇
△

MACH

.300
.500
.600
.700

ALPHA1
RUD-U
ELV-1B
SI-2
SS-6

PARAMETRIC VALUES

2.000 STAB -3.200
.000 RUD-L .000
.000 ELV-OB 3.000
.000 S3-4 .000
.000 IORB 4.000

REFERENCE INFORMATION

SREF 5500.0000 SQ.FT.
LREF 327.8000 IN.
BREF 2348.0000 IN.
XMRP 1339.9100 IN. XC
YMRP .0000 IN. YC
ZMRP 190.7500 IN. ZC
SCALE .0300

INCREMENTAL ROLLING MOMENT COEFFICIENT(STABILITY AXIS), DCSL

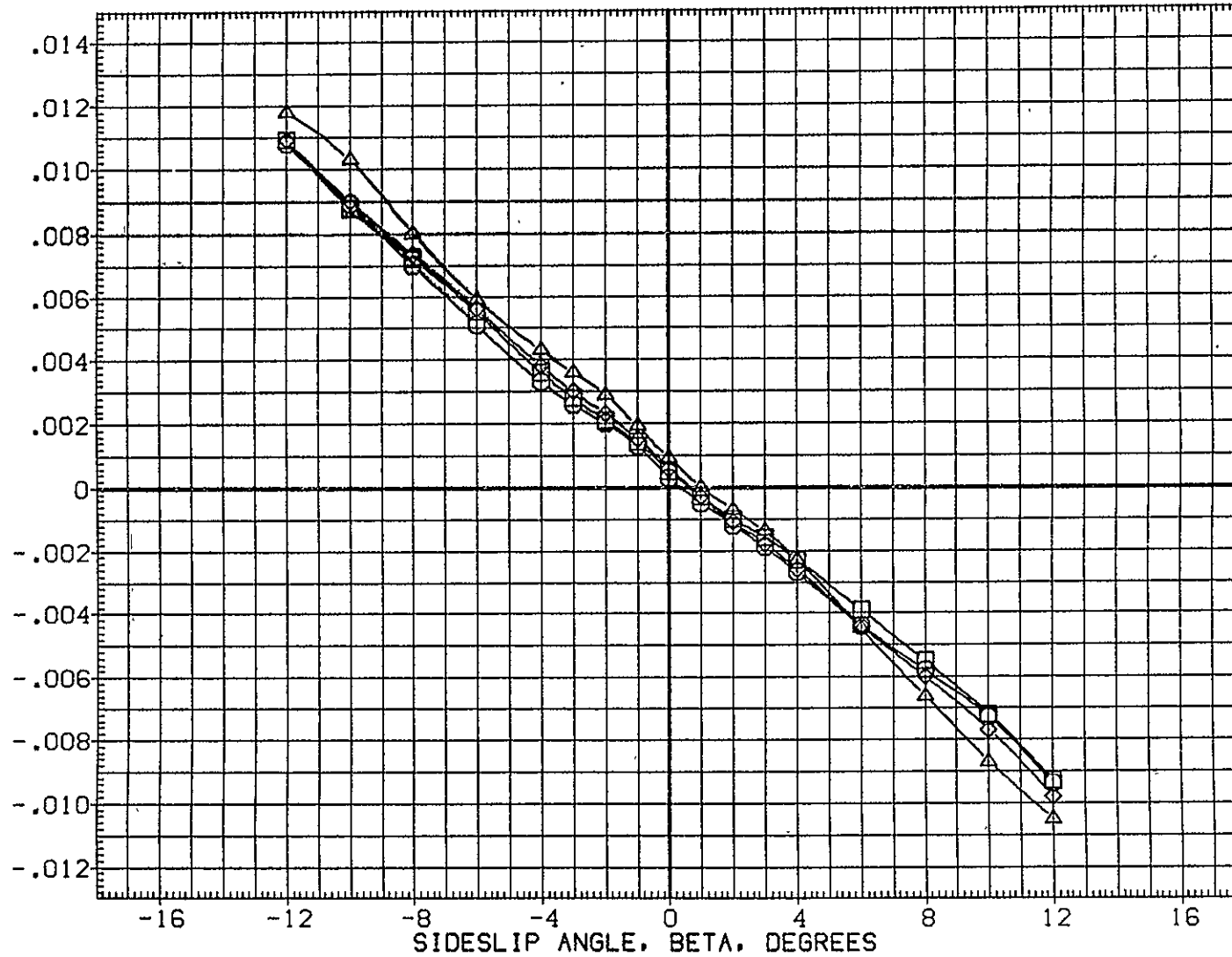


FIG.175 747+0RB(4 DEG),BASIC TAIL,FLAPS UP FERRY,ALPHA1=2(S=-3.2)

747

PAGE 628

CA5 ORB TC5 AT38.3 (PRES. K1 FO H15.1A V9.1)(XGM109)

SYMBOL	MACH	PARAMETRIC VALUES
○	.300	ALPHA1 2.000 STAB -3.200
□	.501	RUD-U .000 RUD-L .000
◇	.599	ELV-1B .000 ELV-OB 3.000
△	.700	S1-2 .000 S3-4 .000
		S5-6 .000 10RB 4.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN. X0
YMRP	.0000	IN. Y0
ZMRP	375.0000	IN. Z0
SCALE	.0300	

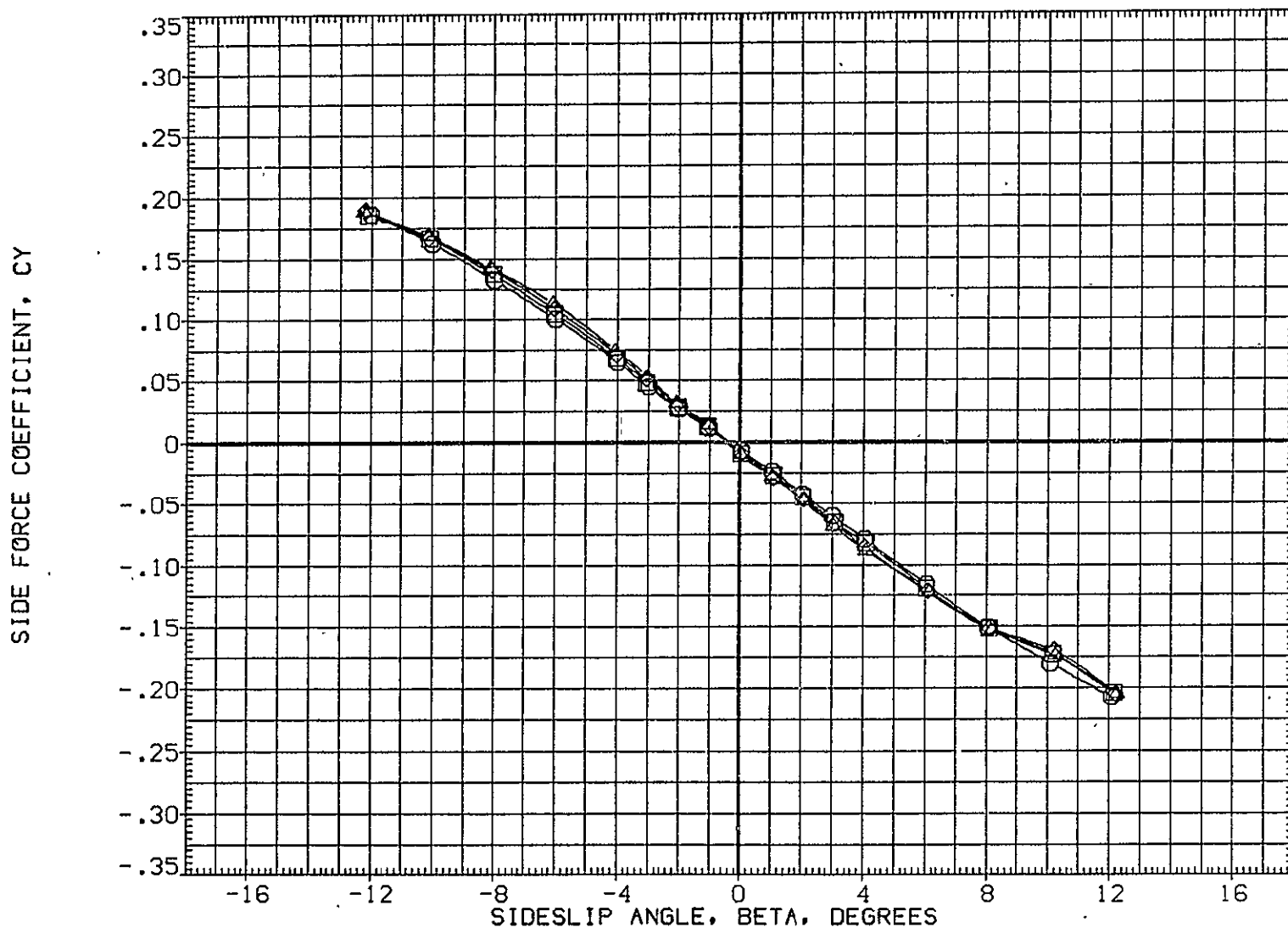


FIG.176 747+ORB(4 DEG),BASIC TAIL,FLAPS UP FERRY,ALPHA1=2(S=-3.2)

ORB

SYMBOL	MACH	PARAMETRIC VALUES	REFERENCE INFORMATION
○	.300	ALPHA1 2.000 STAB -3.200	SREF 2690.0000 SQ.FT.
□	.501	RUD-U .000 RUD-L .000	LREF 474.8100 IN.
◇	.599	ELV-1B .000 ELV-OB 3.000	BREF 936.6800 IN.
△	.700	S1-2 .000 S3-4 .000	XMRP 1109.0000 IN. X0
		S5-6 .000 10RB 4.000	YMRP .0000 IN. Y0
			ZMRP 375.0000 IN. Z0
			SCALE .0300

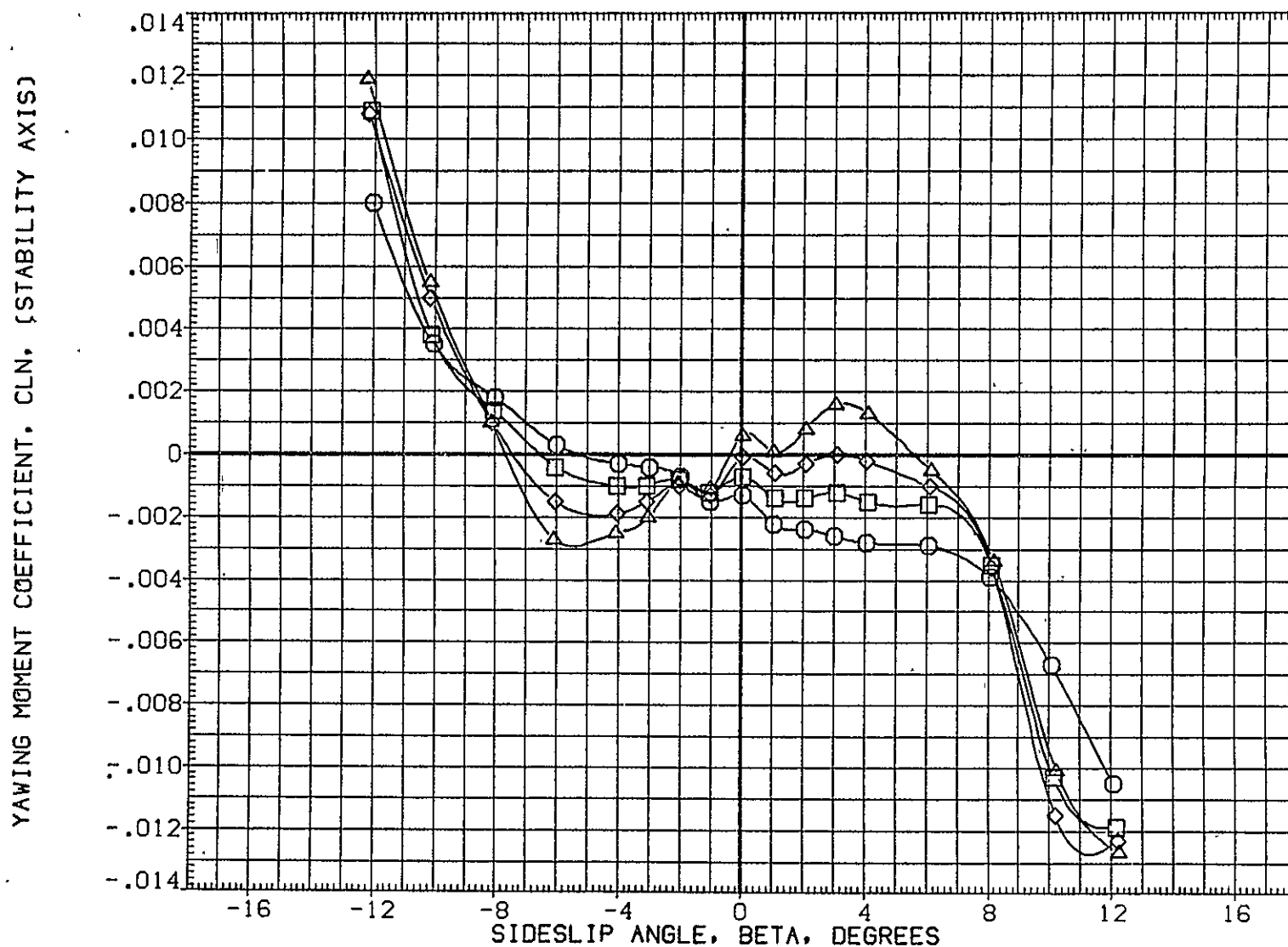


FIG.176 747+ORB(4 DEG),BASIC TAIL,FLAPS UP FERRY,ALPHA1=2(S=-3.2)

ORB

CA5 ORB TC5 AT38.3 (PRES. K1 FO H15.1A V9.1)(XGM109)

SYMBOL	MACH	PARAMETRIC VALUES				REFERENCE INFORMATION		
○	.300	ALPHA1	2.000	STAB	-3.200	SREF	2690.0000	SQ.FT.
□	.501	RUD-U	.000	RUD-L	.000	LREF	474.8100	IN.
◇	.599	ELV-1B	.000	ELV-OB	3.000	BREF	936.6800	IN.
△	.700	S1-2	.000	S3-4	.000	XMRP	1109.0000	IN. X0
		S5-6	.000	IORB	4.000	YMRP	.0000	IN. Y0
						ZMRP	375.0000	IN. Z0
						SCALE	.0300	

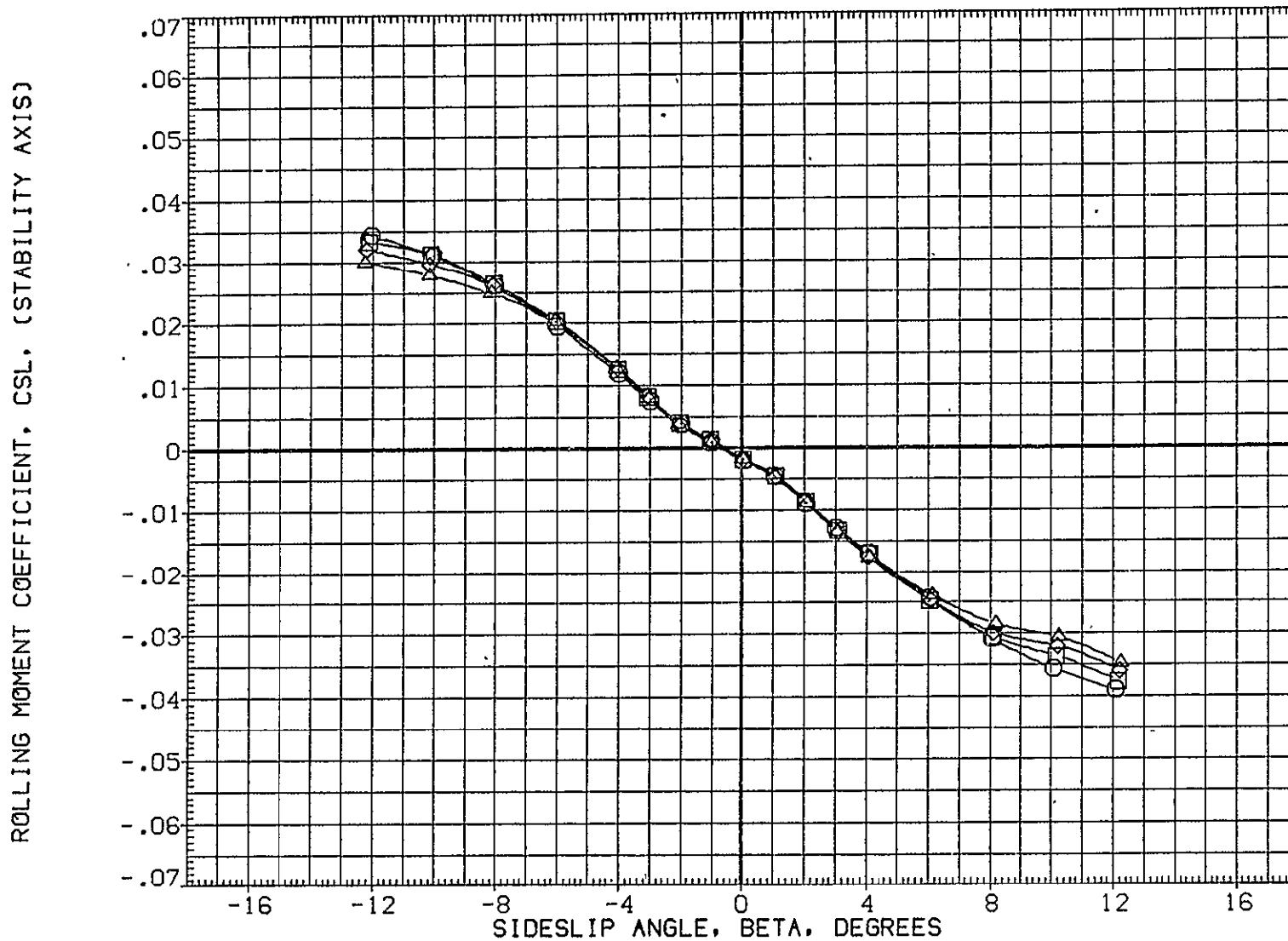


FIG.176 747+ORB(4 DEG),BASIC TAIL,FLAPS UP FERRY,ALPHA1=2(S=-3.2)

ORB

SYMBOL	MACH	PARAMETRIC VALUES			
○	.300	ALPHA1	6.000	STAB	-3.200
□	.500	RUD-U	.000	RUD-L	.000
◇	.600	ELV-1B	.000	ELV-0B	3.000
△	.700	S1-2	.000	S3-4	.000
		S5-6	.000	I0RB	4.000

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

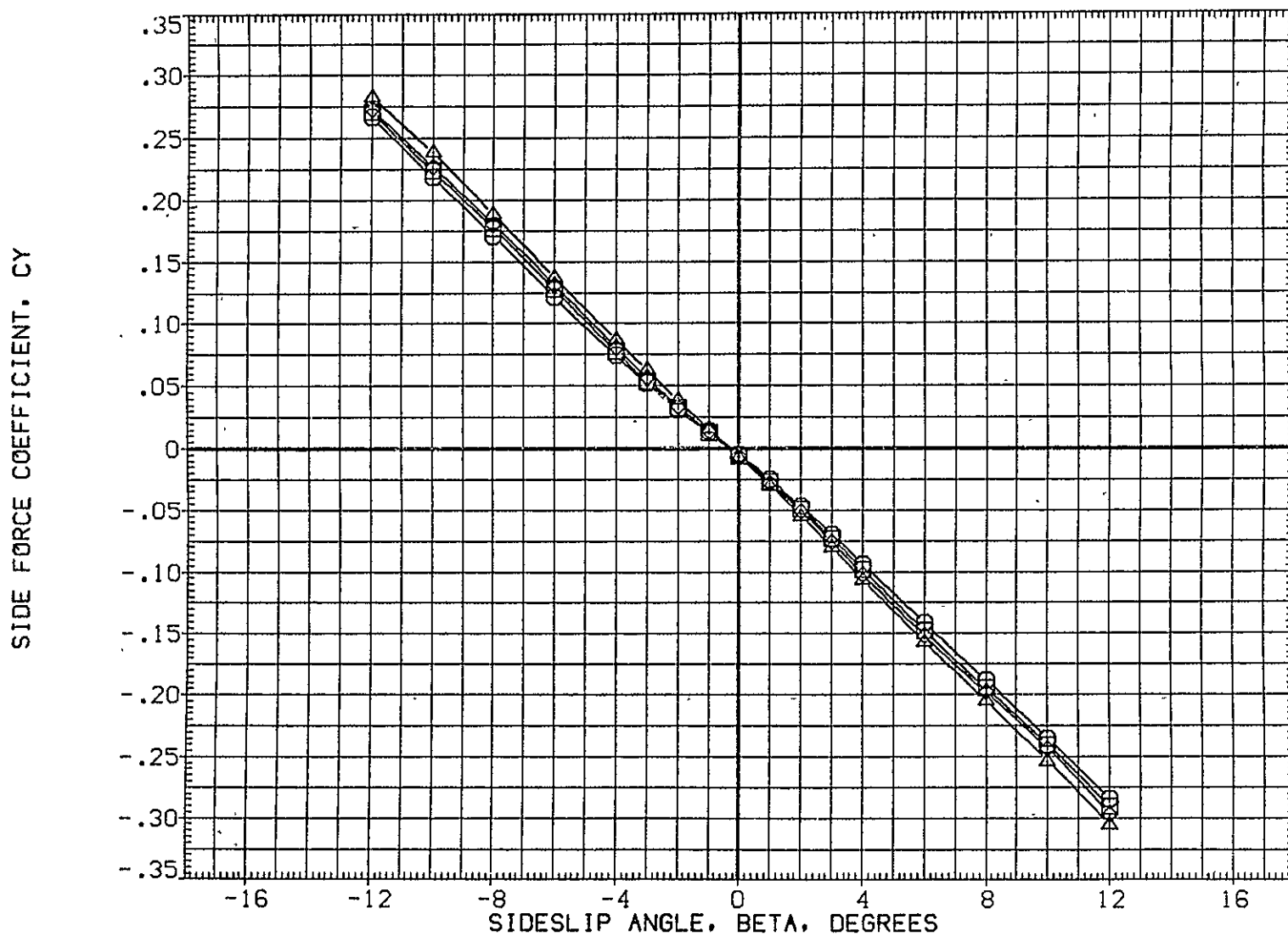


FIG.177 747+0RB(4 DEG),BASIC TAIL,FLAPS UP FERRY,ALPHA1=6(S=-3.2)

TOTAL

CA5 K1 F0 H15.1A V9.1 (PLUS. ORB TC5 AT38.3)(RGM110)

SYMBOL	MACH	PARAMETRIC VALUES
○	.300	ALPHA1 6.000 STAB -3.200
□	.500	RUD-U .000 RUD-L .000
◇	.600	ELV-1B .000 ELV-OB 3.000
△	.700	S1-2 .000 S3-4 .000
		S5-6 .000 10RB 4.000

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

YAWING MOMENT COEFFICIENT, CLN, (STABILITY AXIS)

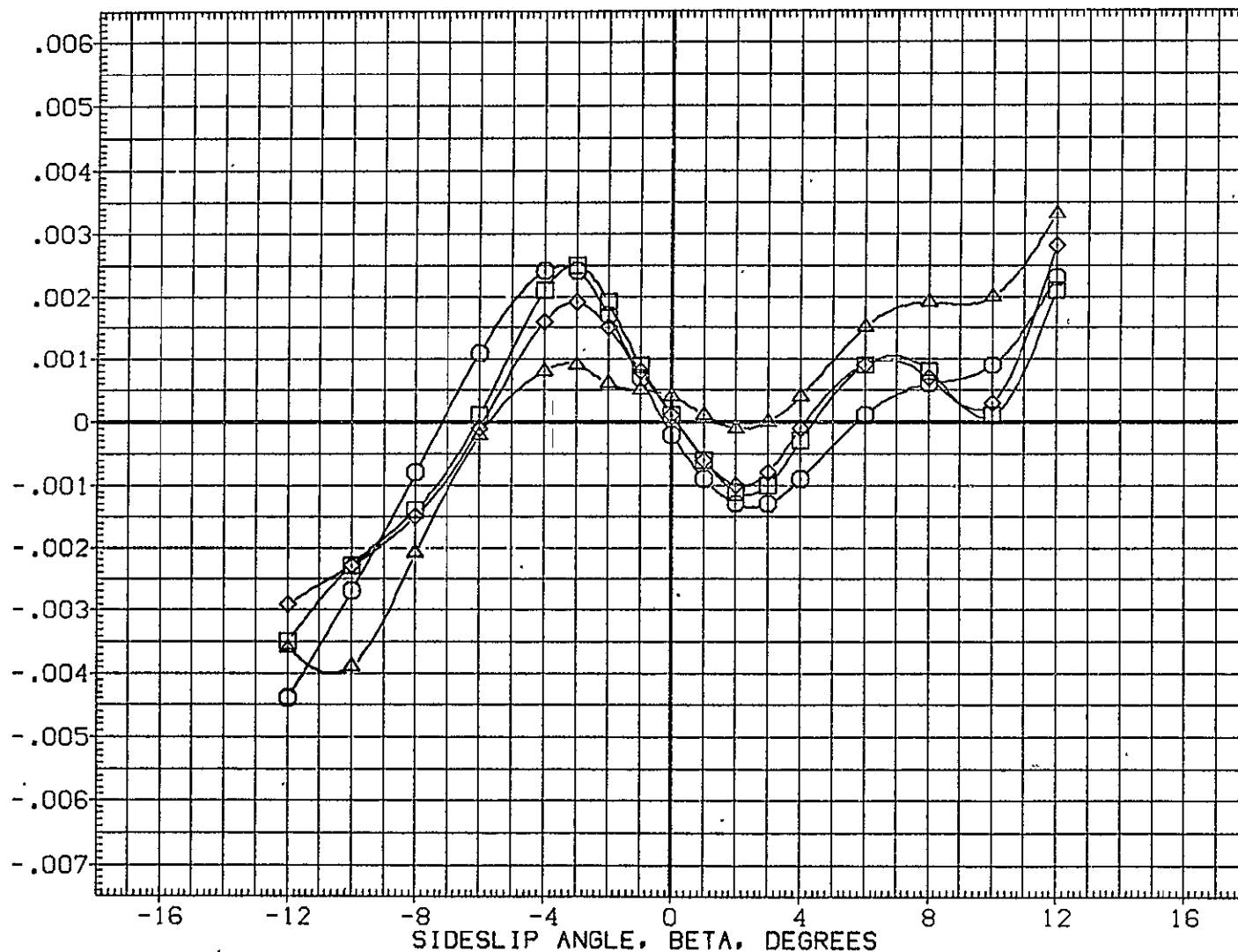


FIG.177 747+ORB(4 DEG),BASIC TAIL,FLAPS UP FERRY,ALPHA1=6(S=-3.2)

TOTAL

SYMBOL

MACH

PARAMETRIC VALUES

REFERENCE INFORMATION

○
□
◇
△

.300	ALPHA1	6.000	STAB	-3.200
.500	RUD-U	.000	RUD-L	.000
.600	ELV-1B	.000	ELV-0B	3.000
.700	S1-2	.000	S3-4	.000
	S5-6	.000	10RB	4.000

SREF	5500.0000	SQ.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

ROLLING MOMENT COEFFICIENT, CSL, (STABILITY AXIS)

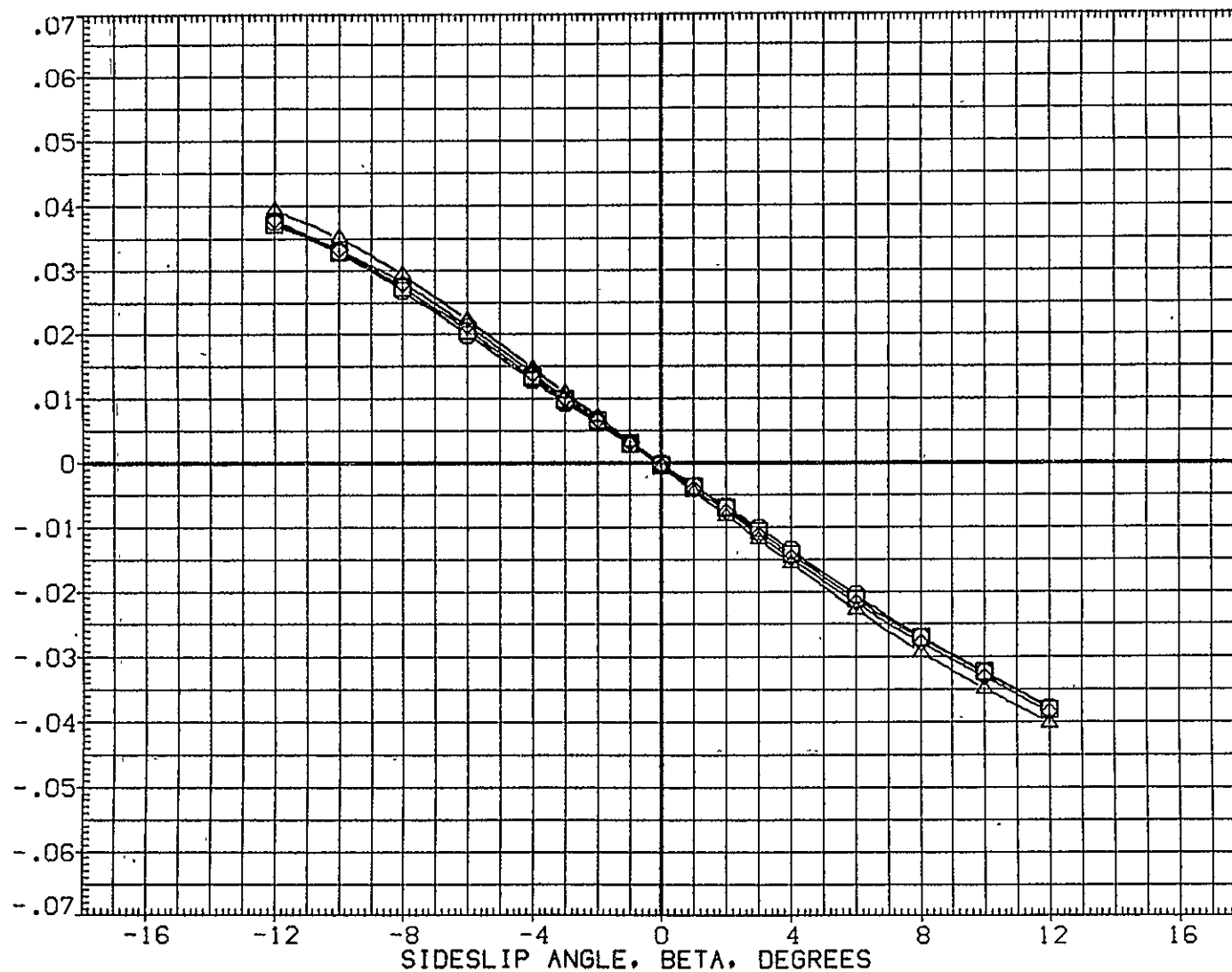


FIG.177 747+0RB(4 DEG),BASIC TAIL,FLAPS UP FERRY,ALPHA1=6(S=-3.2)

TOTAL

PAGE 634

CA5 K1 F0 H15.1A V9.1 MINUS ORB TC5 AT38.3 (BGM110)

SYMBOL	MACH	PARAMETRIC VALUES
○	.300	ALPHA I 6.000 STAB -3.200
□	.500	RUD-U .000 RUD-L .000
◇	.600	ELV-IB .000 ELV-OB 3.000
△	.700	S1-2 .000 S3-4 .000
		S5-6 .000 10RB 4.000

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

INCREMENTAL SIDE FORCE COEFFICIENT(STABILITY AXIS), DCY

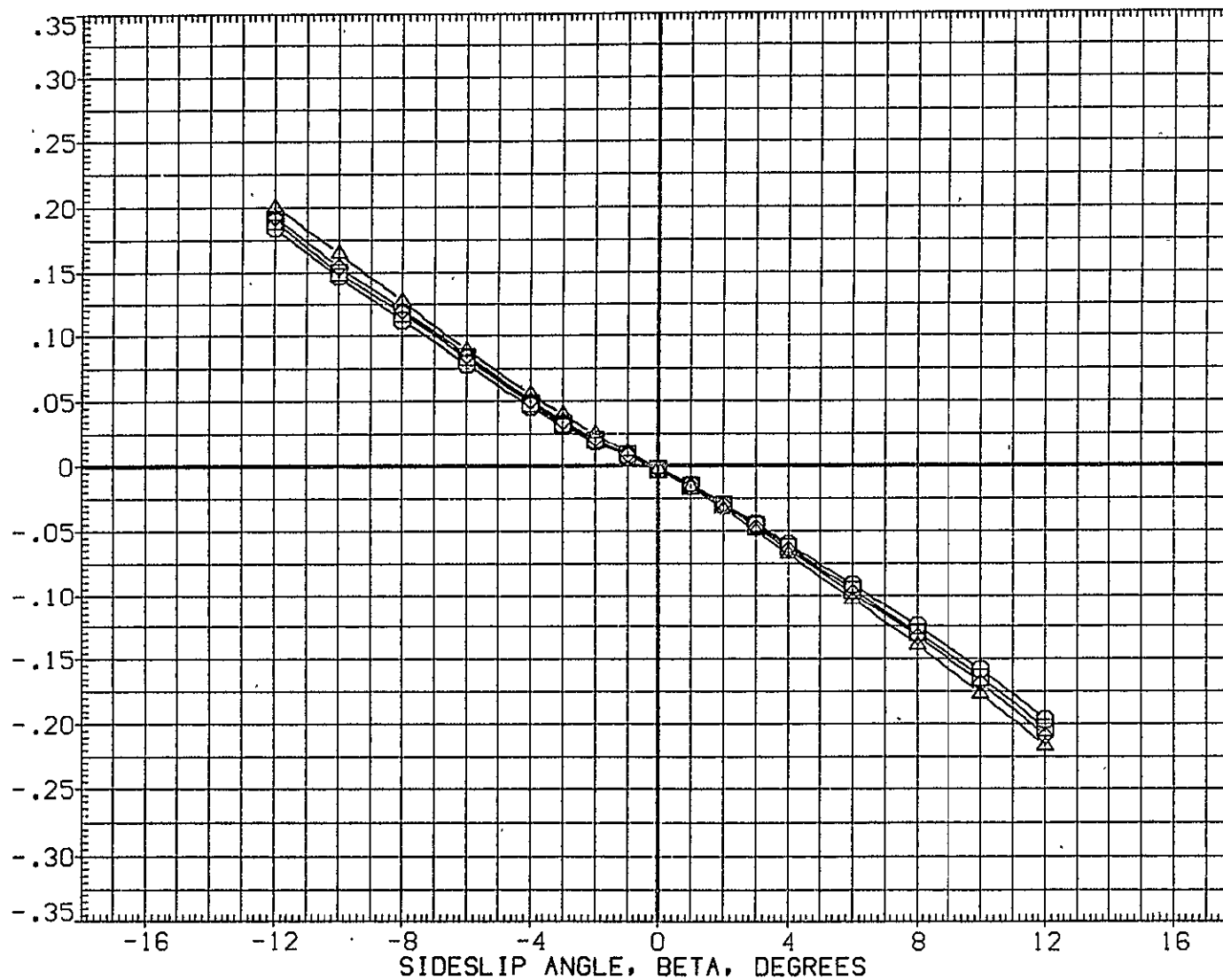


FIG.178 747+0RB(4 DEG),BASIC TAIL,FLAPS UP FERRY,ALPHA I=6(S=-3.2)

747

SYMBOL	MACH	PARAMETRIC VALUES			
○	.300	ALPHAI	6.000	STAB	-3.200
□	.500	RUD-U	.000	RUD-L	.000
◇	.600	ELV-IB	.000	ELV-OB	3.000
△	.700	S1-2	.000	S3-4	.000
		SS-6	.000	IORB	4.000

REFERENCE INFORMATION		
SREF	5500.0000	SQ.Ft.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

INCREMENTAL YAWING MOMENT COEFFICIENT(STABILITY AXIS), DCLN

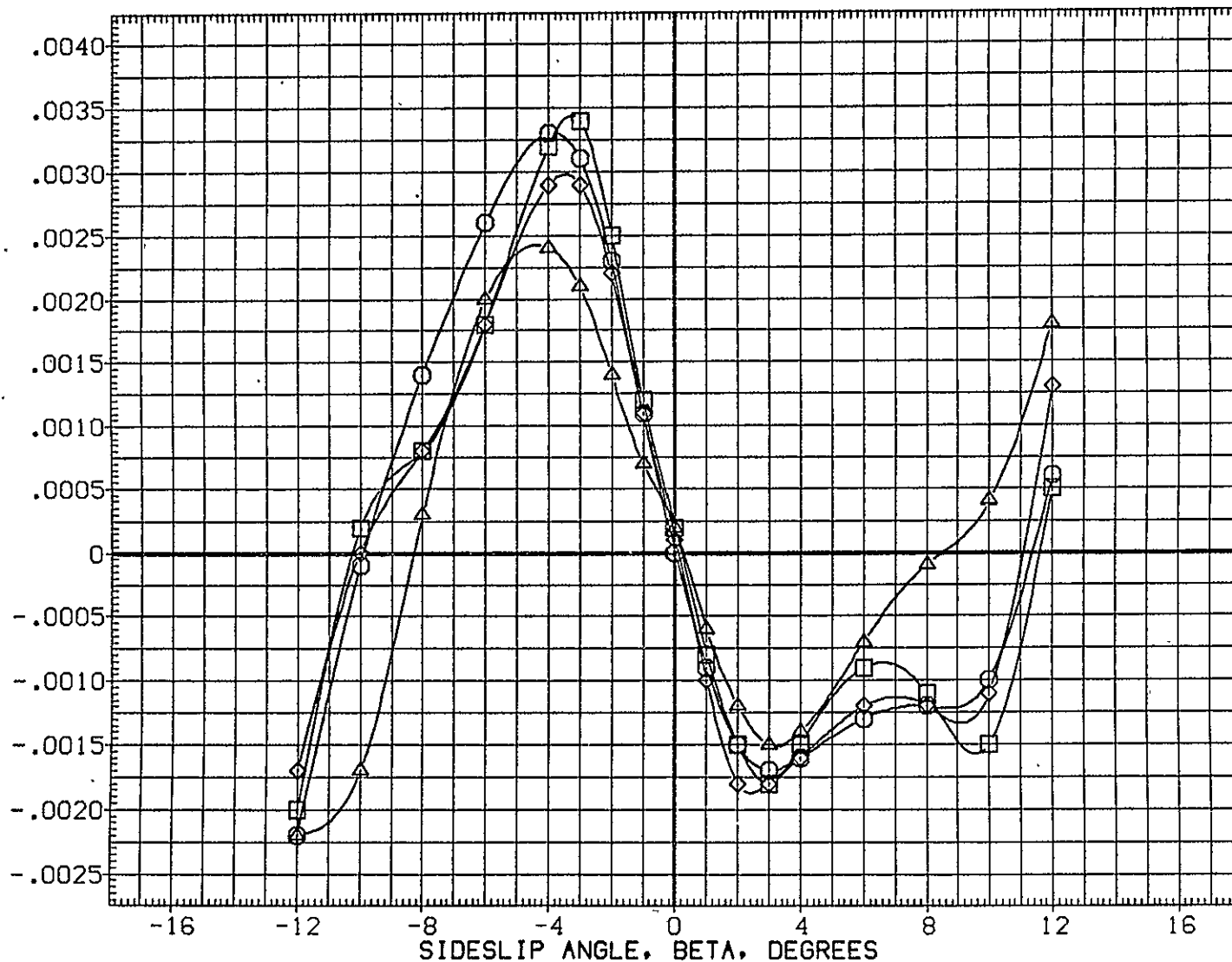


FIG.178 747+ORB(4 DEG),BASIC TAIL,FLAPS UP FERRY,ALPHAI=6(S=-3.2)

747

CA5 K1 F0 H15.1A V9.1 MINUS ORB TC5 AT38.3 (BGM110)

SYMBOL	MACH	PARAMETRIC VALUES
○	.300	ALPHA I 6.000 STAB -3.200
□	.500	RUD-U .000 RUD-L .000
◇	.600	ELV-1B .000 ELV-OB 3.000
△	.700	S1-2 .000 S3-4 .000
		SS-6 .000 TORB 4.000

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

INCREMENTAL ROLLING MOMENT COEFFICIENT(STABILITY AXIS), DCSL

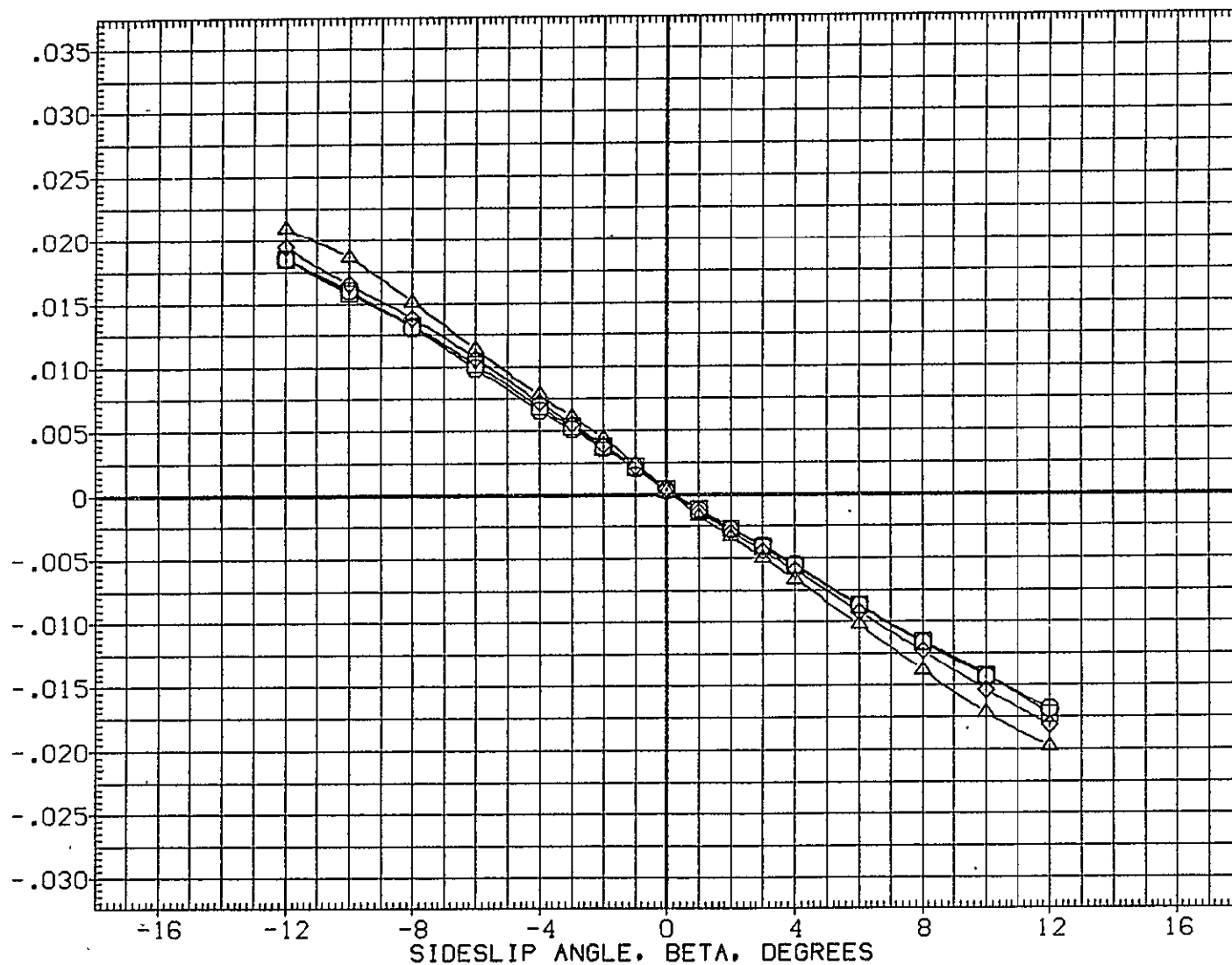


FIG.178 747+ORB(4 DEG),BASIC TAIL,FLAPS UP FERRY,ALPHA I=6(S=-3.2)

747

SYMBOL	MACH	PARAMETRIC VALUES			
○	.300	ALPHA1	6.000	STAB	-3.200
□	.500	RUD-U	.000	RUD-L	.000
◇	.601	ELV-1B	.000	ELV-OB	3.000
△	.700	S1-2	.000	S3-4	.000
		S5-6	.000	IORB	4.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN. X0
YMRP	.0000	IN. Y0
ZMRP	375.0000	IN. Z0
SCALE	.0300	

SIDE FORCE COEFFICIENT, CY

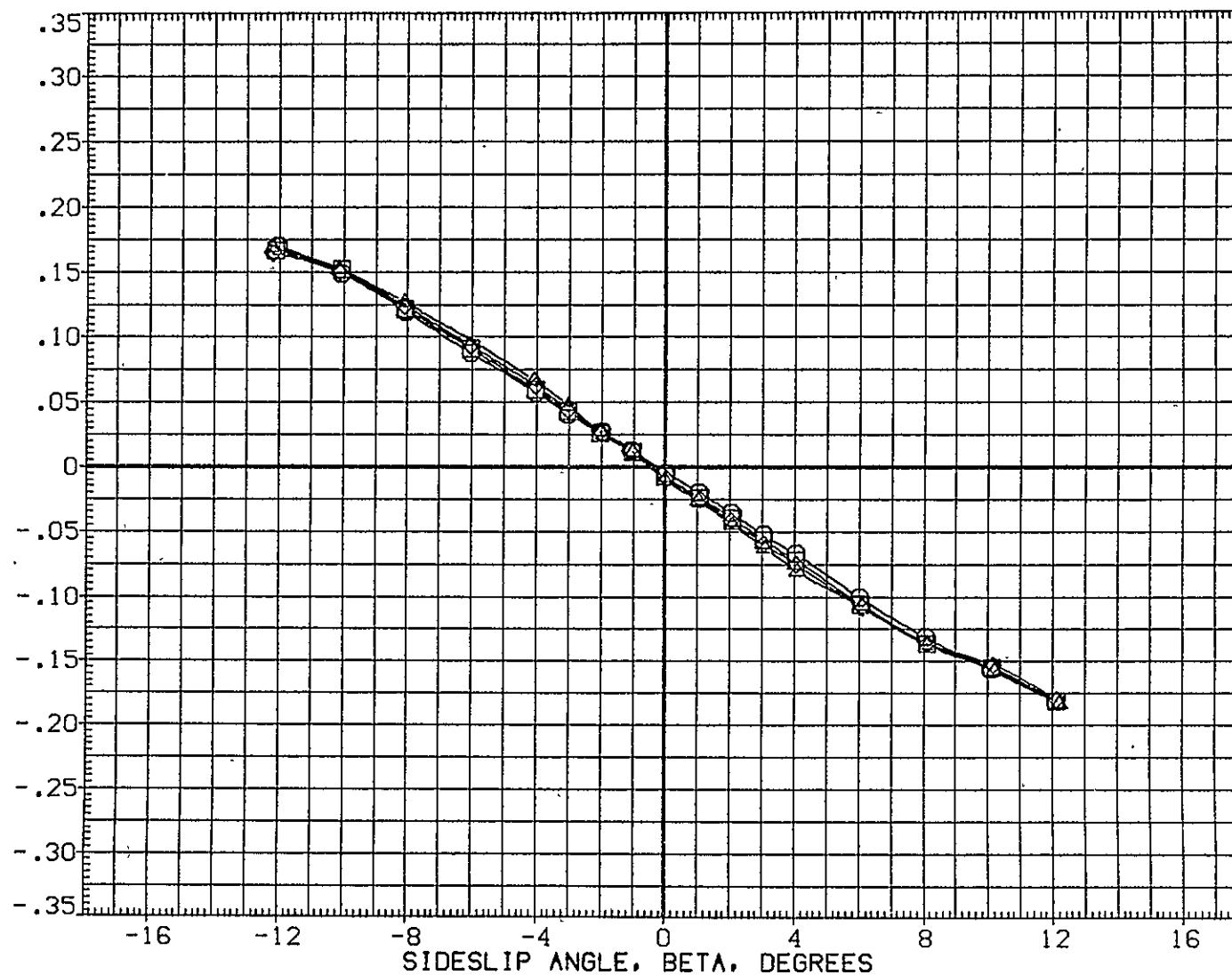


FIG.179 747+ORB(4 DEG), BASIC TAIL, FLAPS UP FERRY, ALPHA1=6(S=-3.2)

ORB

CA5 0RB TC5 AT38.3 (PRES. K1 F0 H15.1A V9.1)(XGM110)

SYMBOL
○
□
◇
△

MACH	ALPHA I	PARAMETRIC VALUES	STAB	-3.200
.300	RUD-U	.000	RUD-L	.000
.500	ELV-1B	.000	ELV-0B	3.000
.601	SI-2	.000	S3-4	.000
.700	S5-6	.000	IORB	4.000

REFERENCE INFORMATION

SREF	2690.0000	50.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN. X0
YMRP	.0000	IN. Y0
ZMRP	375.0000	IN. Z0
SCALE	.0300	

YAWING MOMENT COEFFICIENT, CLN, (STABILITY AXIS)

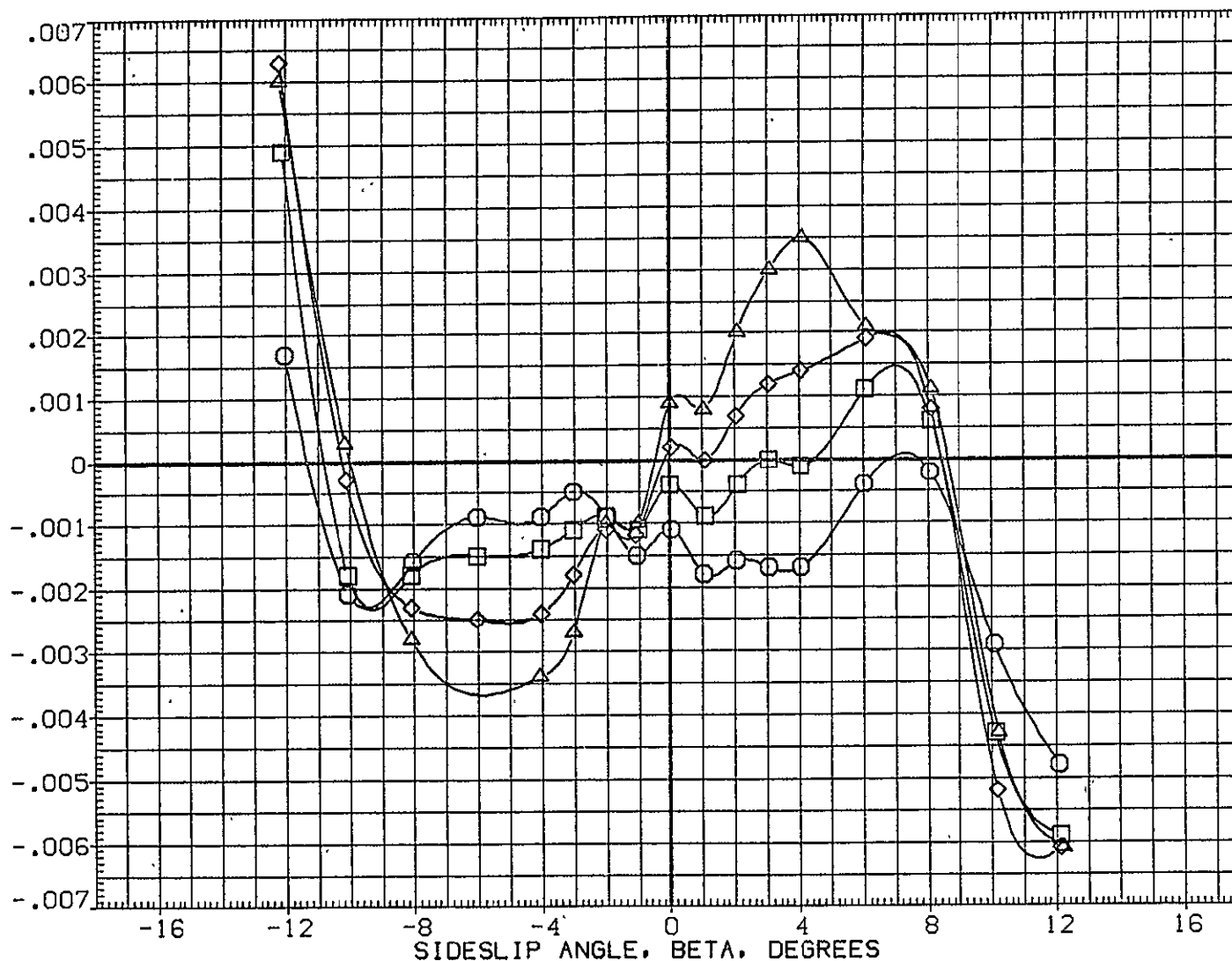


FIG.179 747+0RB(4 DEG),BASIC TAIL,FLAPS UP FERRY,ALPHA I=6(S=-3.2)

0RB

SYMBOL
 ○
 □
 ◇
 △

MACH

PARAMETRIC VALUES

.300	ALPHA1	6.000	STAB	-3.200
.500	RUD-U	.000	RUD-L	.000
.601	ELV-1B	.000	ELV-0B	3.000
.700	S1-2	.000	S3-4	.000
	S5-6	.000	10RB	4.000

REFERENCE INFORMATION

SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRF	1109.0000	IN. X0
YMRP	.0000	IN. Y0
ZMRP	375.0000	IN. Z0
SCALE	.0300	

ROLLING MOMENT COEFFICIENT, CSL, (STABILITY AXIS)

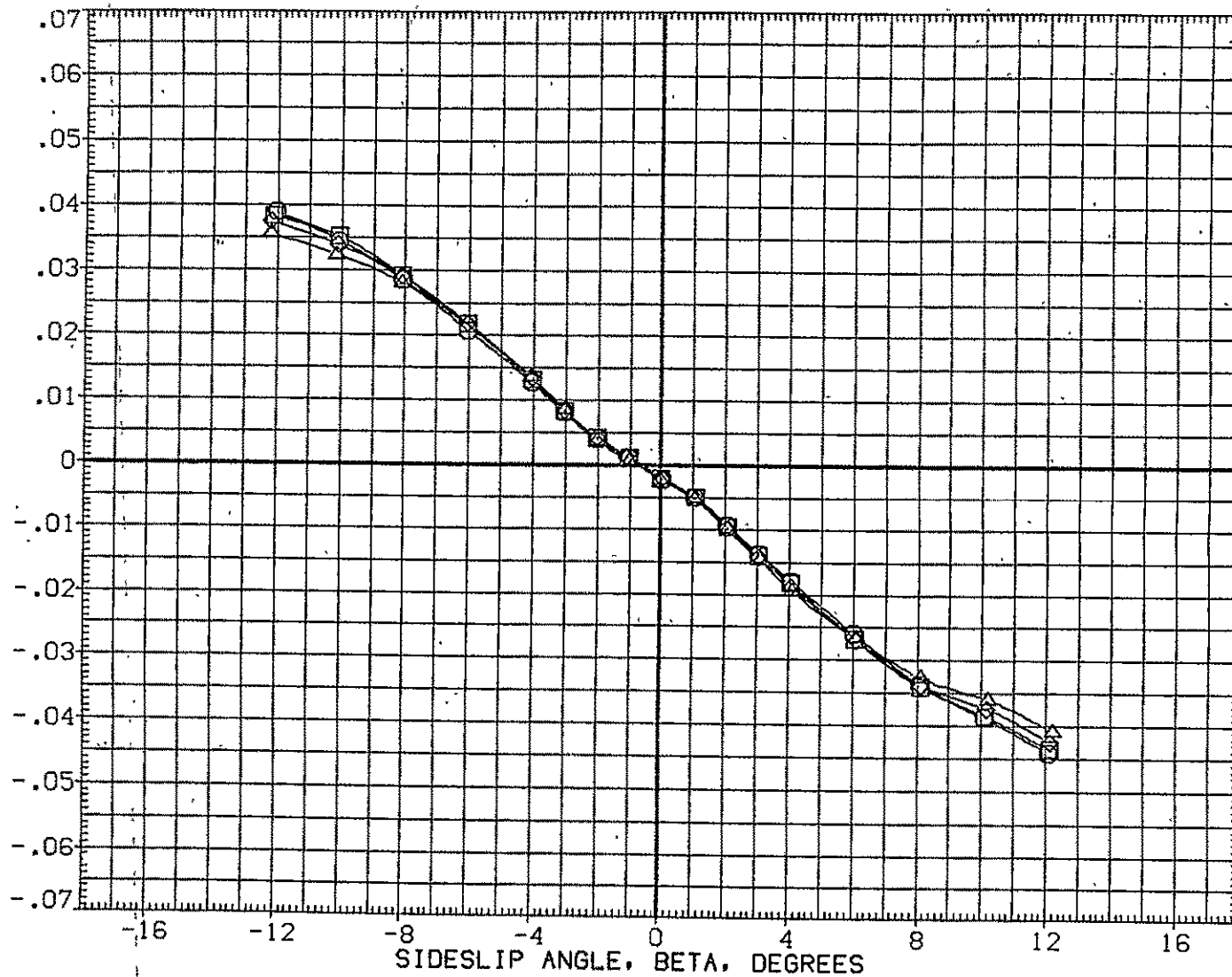


FIG.179 747+0RB(4 DEG),BASIC TAIL,FLAPS UP FERRY,ALPHA1=6(S=-3.2)

0RB

CA5 K1 F0 H15.1A V9.1 (PLUS. ORB TC5 AT38.3)(RGM111)

SYMBOL	MACH	PARAMETRIC VALUES	REFERENCE INFORMATION
○	.300	ALPHA1 8.000 STAB -3.200	SREF 5500.0000 SQ.FT.
□	.500	RUD-U .000 RUD-L .000	LREF 327.8000 IN.
◇	.600	ELV-1B .000 ELV-OB 3.000	BREF 2348.0000 IN.
△	.700	S1-2 .000 S3-4 .000	XMRP 1339.9100 IN. XC
		S5-6 .000 IORB 4.000	YMRP .0000 IN. YC
			ZMRP 190.7500 IN. ZC
			SCALE .0300

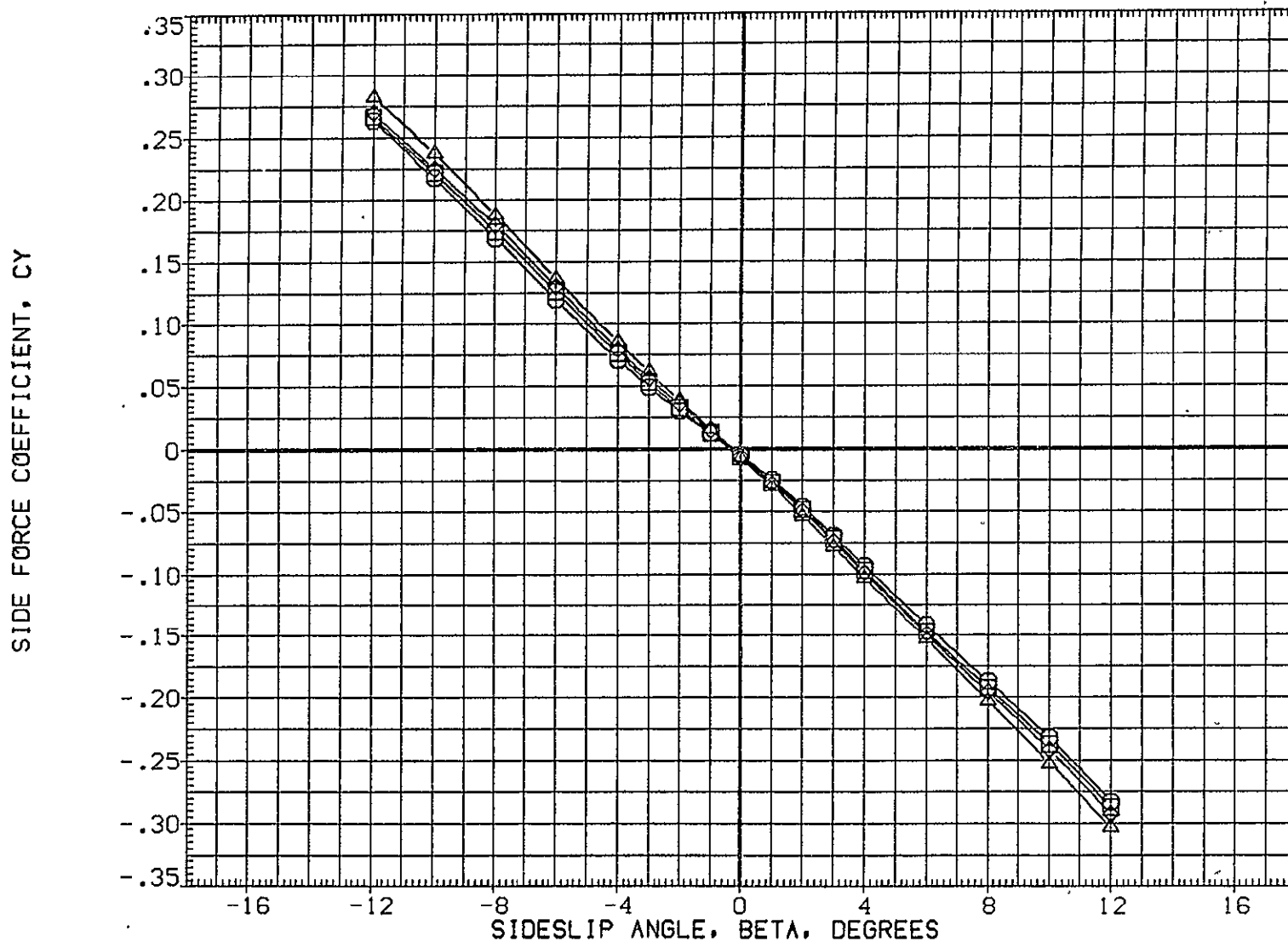


FIG.180 747+ORB(4 DEG),BASIC TAIL,FLAPS UP FERRY,ALPHA1=8(S=-3.2)

TOTAL

SYMBOL	MACH	PARAMETRIC VALUES	REFERENCE INFORMATION
○	.300	ALPHA1 8.000 STAB -3.200	SREF 5500.0000 SQ.FT.
□	.500	RUD-U .000 RUD-L .000	LREF 327.8000 IN.
◇	.600	ELV-1B .000 ELV-OB 3.000	BREF 2348.0000 IN.
△	.700	S1-2 .000 S3-4 .000	XMRP 1339.9100 IN. XC
		SS-6 .000 IORB 4.000	YMRP .0000 IN. YC
			ZMRP 190.7500 IN. ZC
			SCALE .0300

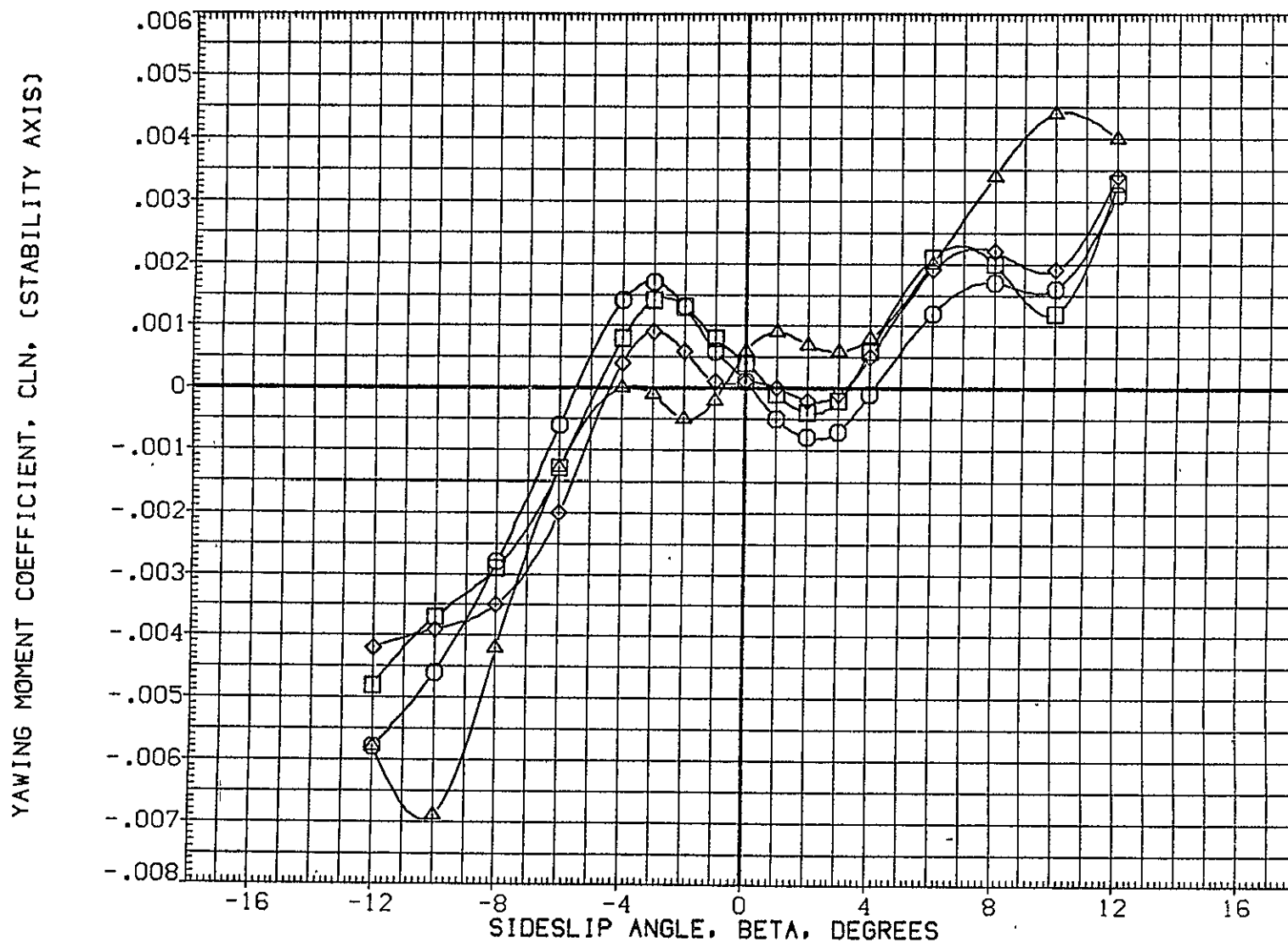


FIG.180 747+ORB(4 DEG),BASIC TAIL,FLAPS UP FERRY,ALPHA1=8(S=-3.2)

TOTAL

CA5 K1 F0 H15.1A V9.1 (PLUS. 0RB TC5 AT38.3)(RGM111)

SYMBOL	MACH	PARAMETRIC VALUES			
○	.300	ALPHA1	8.000	STAB	-3.200
□	.500	RUD-U	.000	RUD-L	.000
◇	.600	ELV-1B	.000	ELV-0B	3.000
△	.700	S1-2	.000	S3-4	.000
		S5-6	.000	10RB	4.000

REFERENCE INFORMATION		
SREF	5500.0000	SG.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

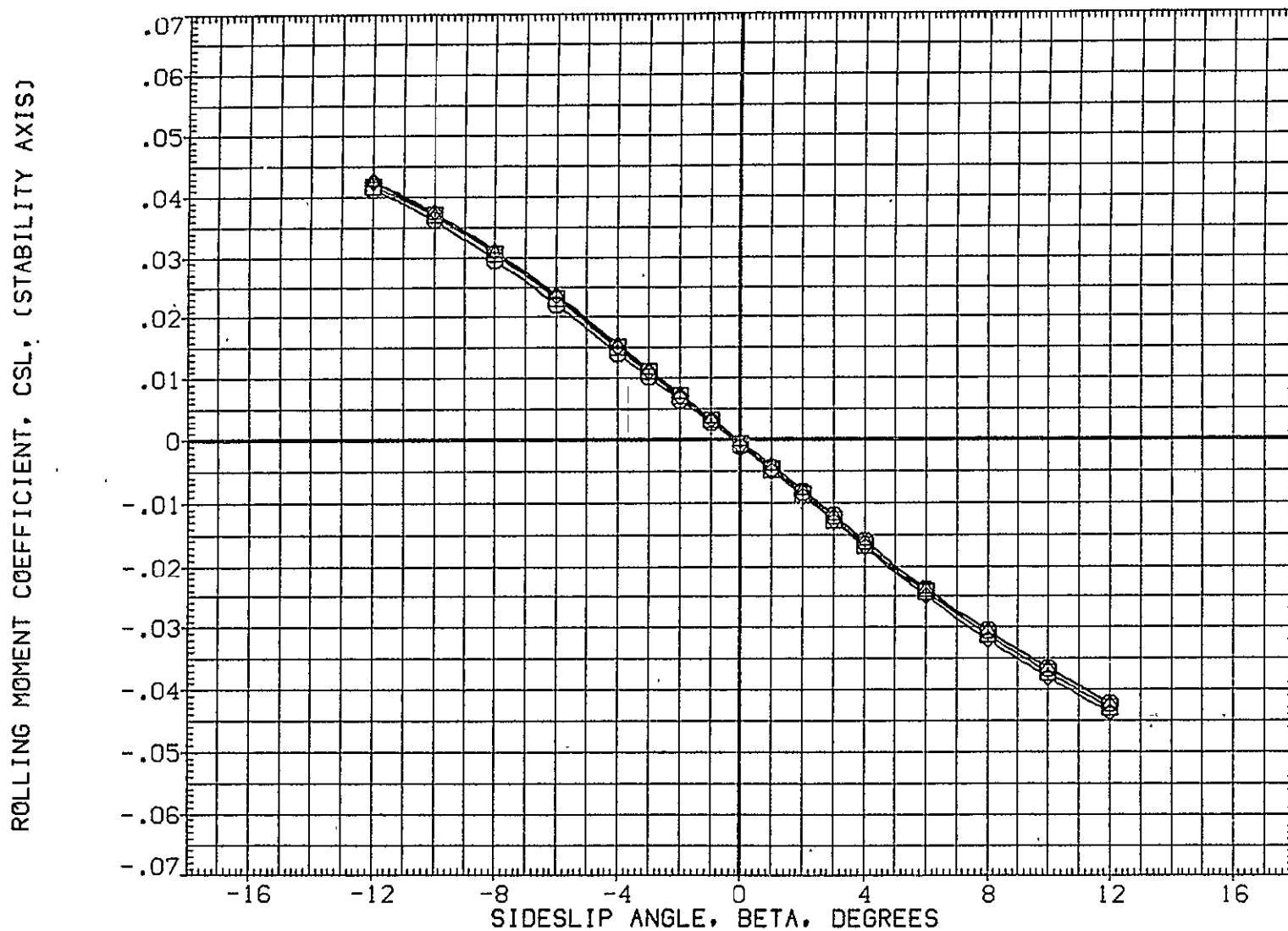


FIG.180 747+0RB(4 DEG),BASIC TAIL,FLAPS UP FERRY,ALPHA1=8(S=-3.2)

TOTAL

SYMBOL	MACH	PARAMETRIC VALUES			
○	.300	ALPHA I	8.000	STAB	-3.200
□	.500	RUD-U	.000	RUD-L	.000
◇	.600	ELV-1B	.000	ELV-0B	3.000
△	.700	S1-2	.000	S3-4	.000
		S5-6	.000	10RB	4.000

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

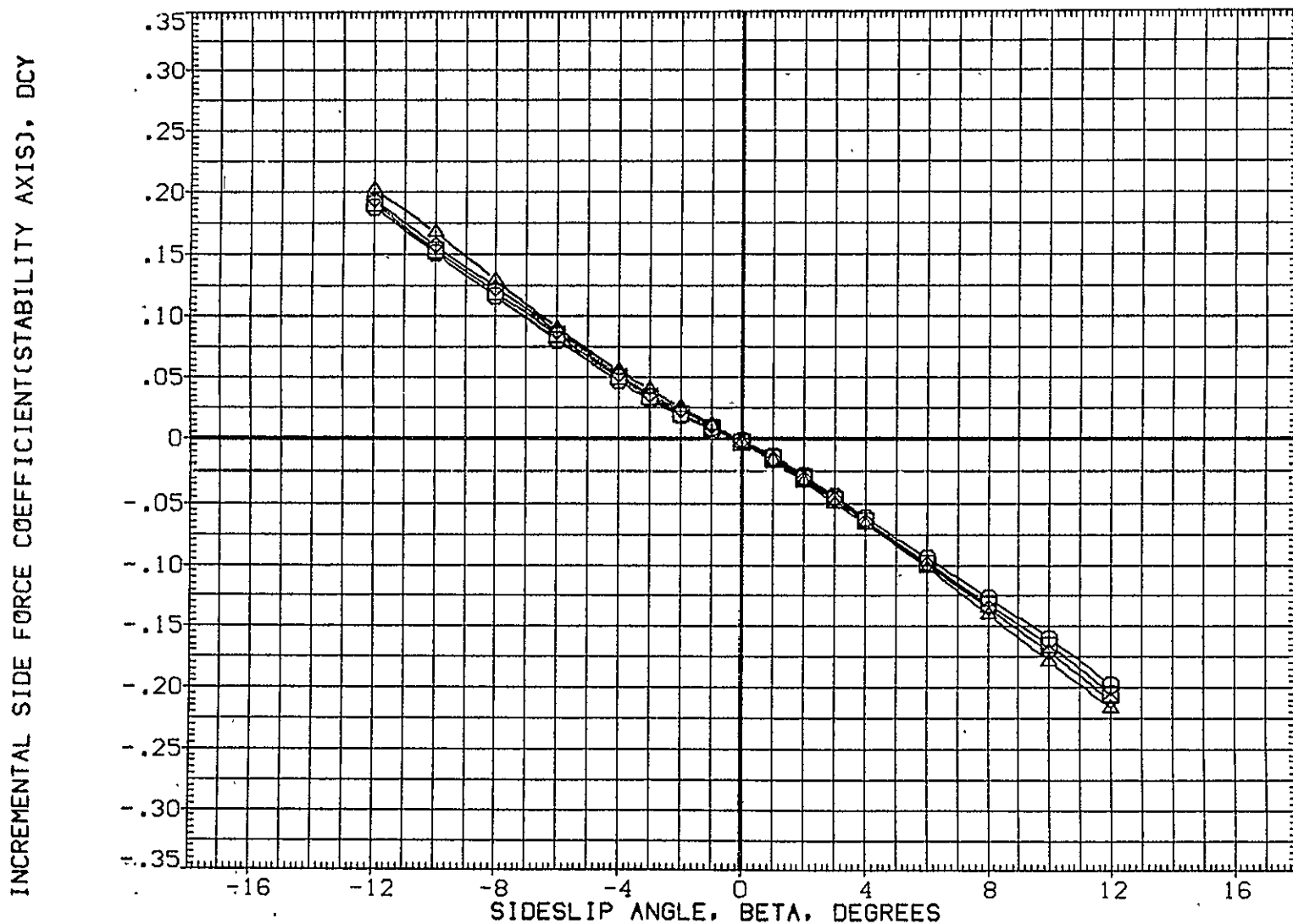


FIG.181 747+ORB(4 DEG),BASIC TAIL,FLAPS UP FERRY,ALPHA I=8(S=-3.2)

747

CA5 K1 F0 H15.1A V9.1 MINUS ORB TC5 AT38.3 (BGM111)

SYMBOL	MACH	PARAMETRIC VALUES	REFERENCE INFORMATION
○	.300	ALPHA I 8.000 STAB -3.200	SREF 5500.0000 SQ.FT.
□	.500	RUD-U .000 RUD-L .000	LREF 327.8000 IN.
◇	.600	ELV-1B .000 ELV-OB 3.000	BREF 2348.0000 IN.
△	.700	S1-2 .000 S3-4 .000	XMRP 1339.9100 IN. XC
		S5-6 .000 IORB 4.000	YMRP .0000 IN. YC
			ZMRP 190.7500 IN. ZC
			SCALE .0300

INCREMENTAL YAWING MOMENT COEFFICIENT (STABILITY AXIS), $DCLN$

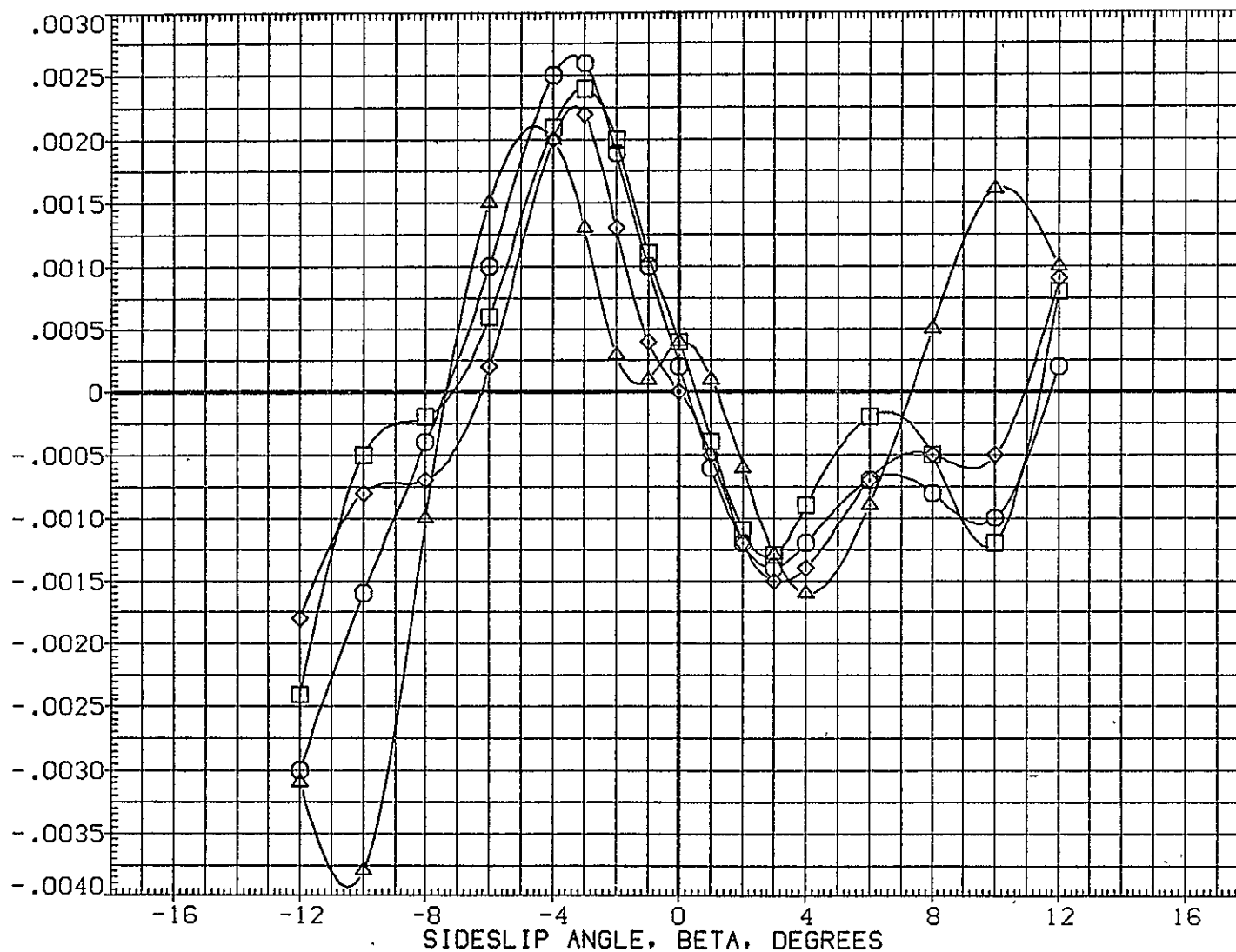


FIG.181 747+ORB(4 DEG),BASIC TAIL,FLAPS UP FERRY,ALPHA I=8(S=-3.2)

747

SYMBOL	MACH	PARAMETRIC VALUES
○	.300	ALPHA1 8.000 STAB -3.200
□	.500	RUD-U --- .000 RUD-L .000
◇	.600	ELV-1B --- .000 ELV-OB 3.000
△	.700	S1-2 .000 S3-4 .000
		S5-6 .000 10RB 4.000

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

INCREMENTAL ROLLING MOMENT COEFFICIENT(STABILITY AXIS), DCSL

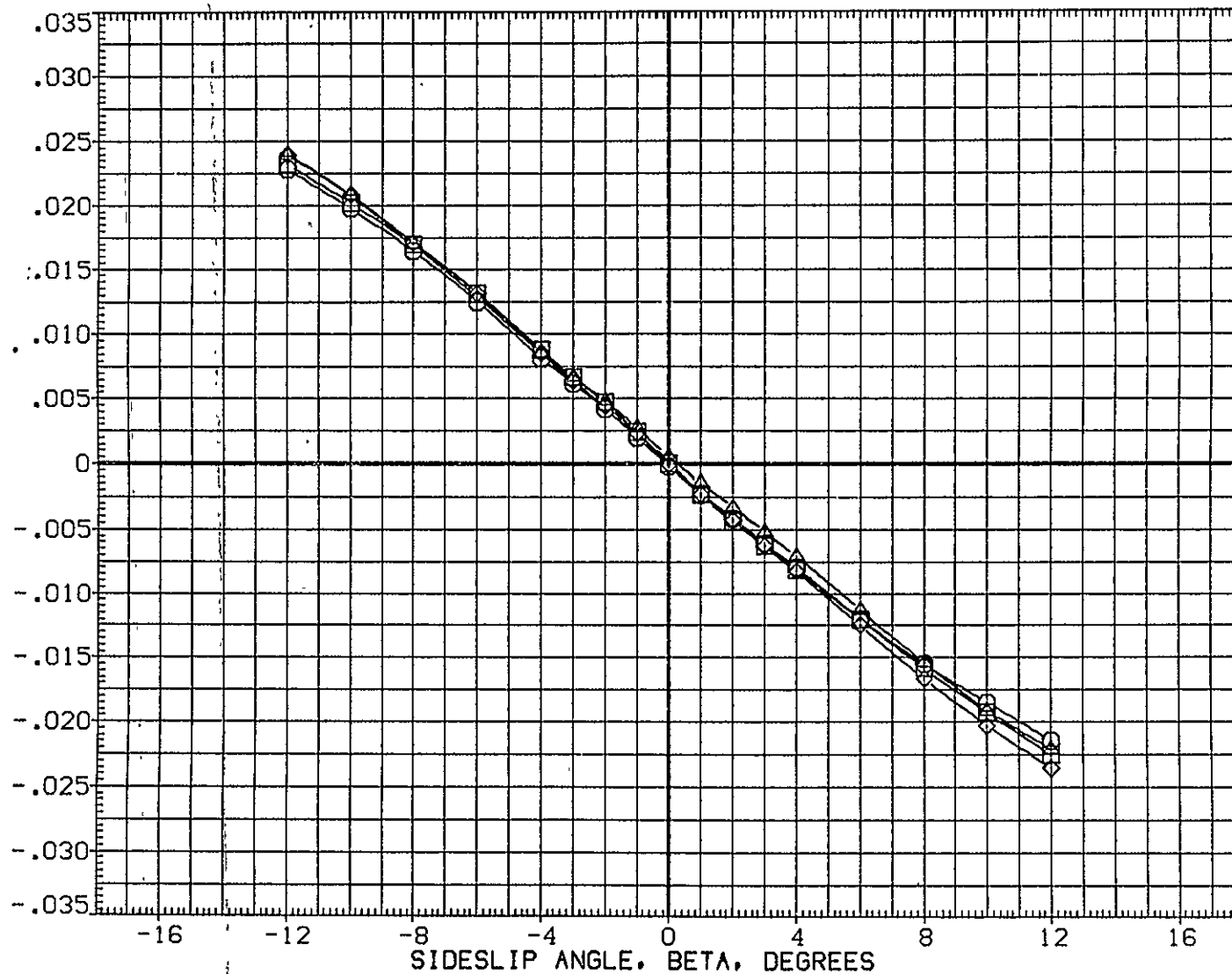


FIG.181 747+ORB(4 DEG),BASIC TAIL,FLAPS UP FERRY,ALPHA1=8(S=-3.2)

747

CA5 ORB TC5 AT38.3 (PRES. K1 FO H15.1A V9.1)(XGM111)

SYMBOL	MACH	PARAMETRIC VALUES	REFERENCE INFORMATION
○	.300	ALPHA I 8.000 STAB -3.200	SREF 2690.0000 SQ.FT.
□	.500	RUD-U .000 RUD-L .000	LREF 474.8100 IN.
◇	.600	ELV-IB .000 ELV-OB 3.000	BREF 936.6800 IN.
△	.700	S1-2 .000 S3-4 .000	XMRP 1109.0000 IN. X0
		SS-6 .000 IORB 4.000	YMRP .0000 IN. Y0
			ZMRP 375.0000 IN. Z0
			SCALE .0300

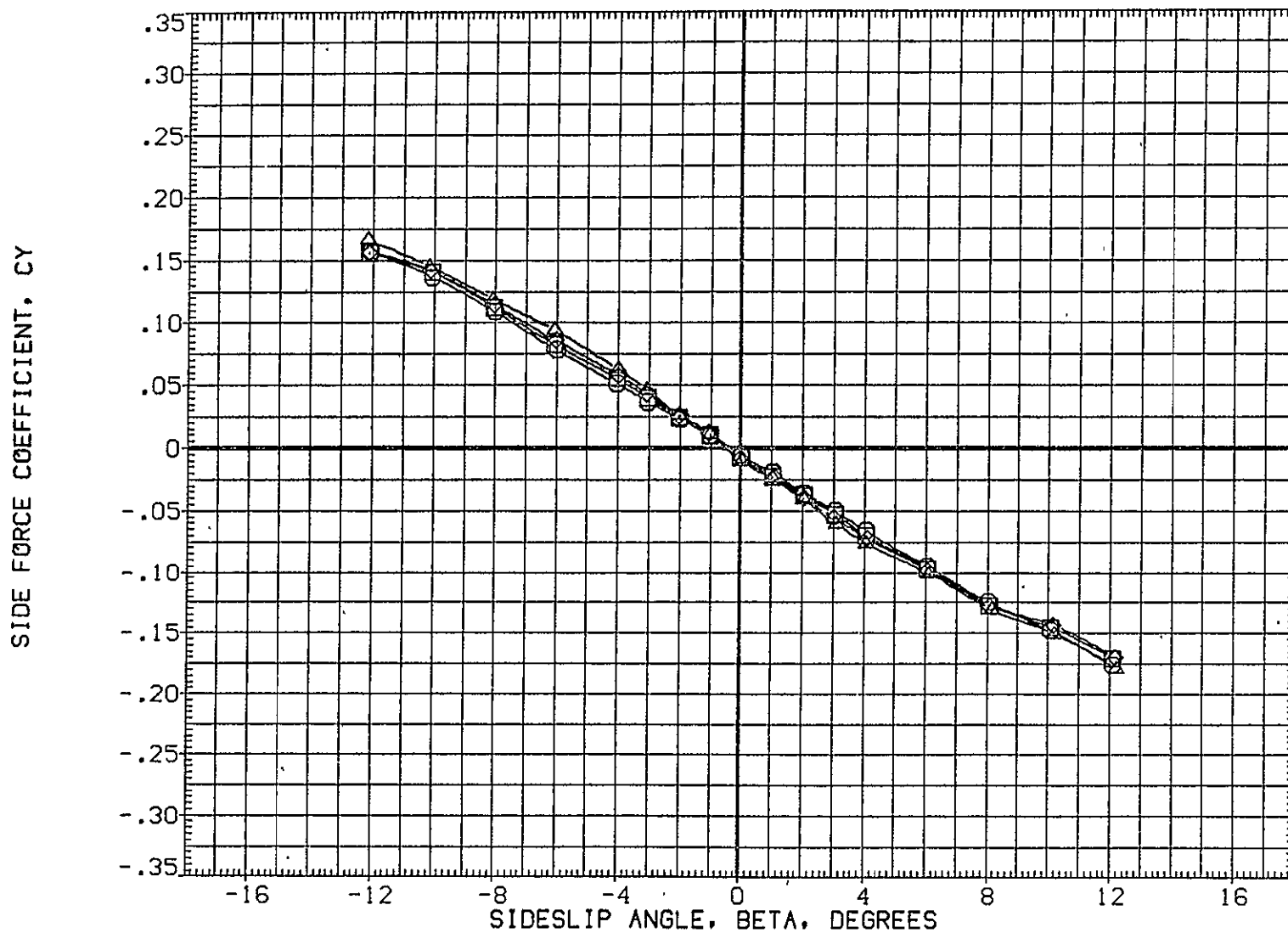


FIG.182 747+ORB(4 DEG),BASIC TAIL,FLAPS UP FERRY,ALPHA I=8(S=-3.2)

ORB

SYMBOL	MACH	PARAMETRIC VALUES			
○	.300	ALPHA1	8.000	STAB	-3.200
□	.500	RUD-U	.000	RUD-L	.000
◇	.600	ELY-18	.000	ELY-08	3.000
△	.700	S1-2	.000	S3-4	.000
		S5-6	.000	ICRB	4.000

REFERENCE INFORMATION		
SREF	.2690:0000	--SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN. X0
YMRP	.0000	IN. Y0
ZMRP	375.0000	IN. Z0
SCALE	.0300	

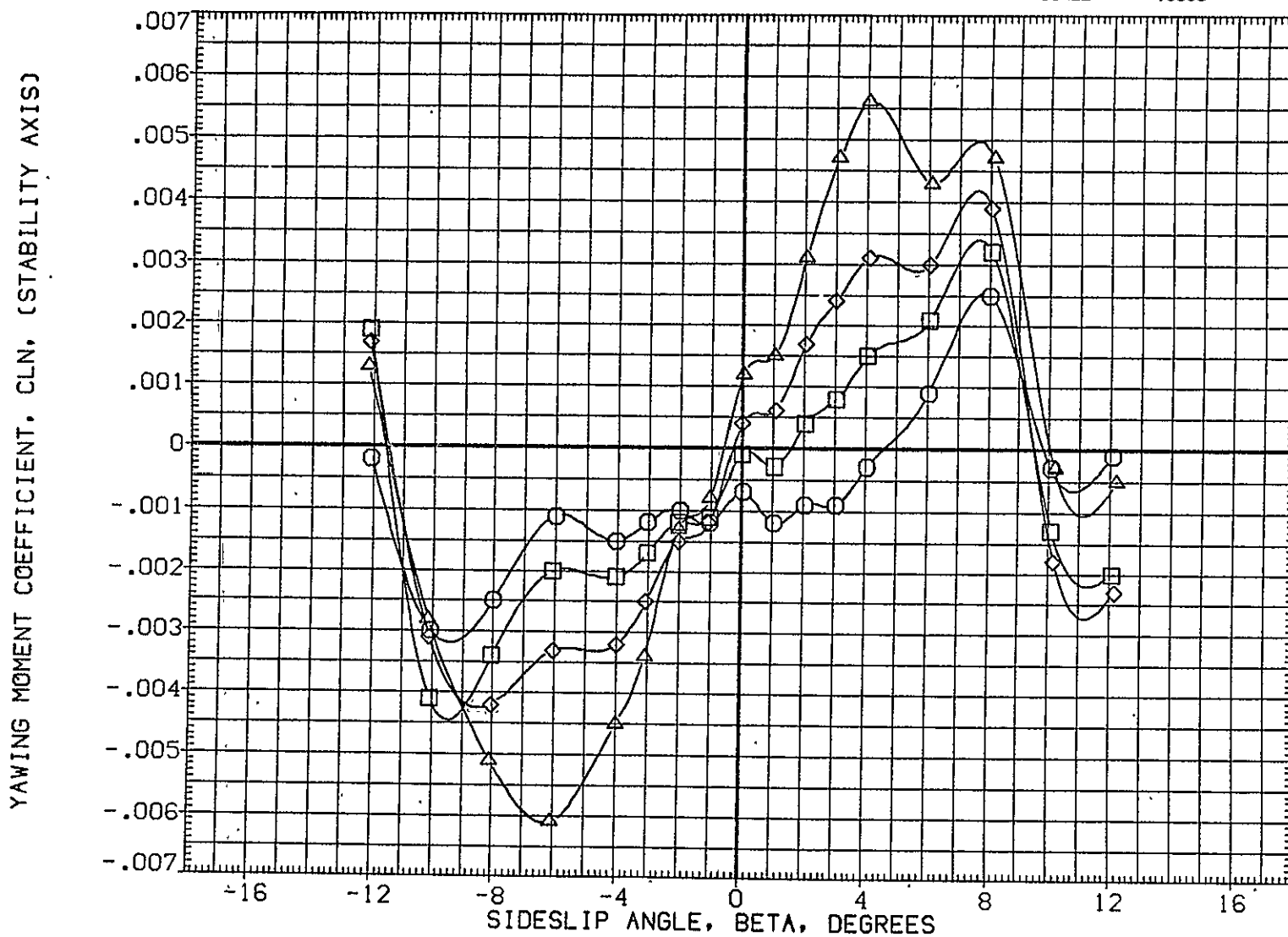


FIG.182 747+0RB(4 DEG),BASIC TAIL,FLAPS UP FERRY,ALPHA1=8(S=-3.2)

0RB

CA5 0RB TC5 AT38.3 (PRES. K1 FO H15.1A V9.1)(XGM111)

SYMBOL	MACH	PARAMETRIC VALUES				REFERENCE INFORMATION	
○	.300	ALPHA I	8.000	STAB	-3.200	SREF	2690.0000 SQ.FT.
□	.500	RUD-U	.000	RUD-L	.000	LREF	474.8100 IN.
◇	.600	ELV-1B	.000	ELV-0B	3.000	BREF	936.6800 IN.
△	.700	S1-2	.000	S3-4	.000	XM RP	1109.0000 IN. X0
		S5-6	.000	10RB	4.000	YM RP	.0000 IN. Y0
						ZM RP	375.0000 IN. Z0
						SCALE	.0300

ROLLING MOMENT COEFFICIENT, CSL, (STABILITY AXIS)

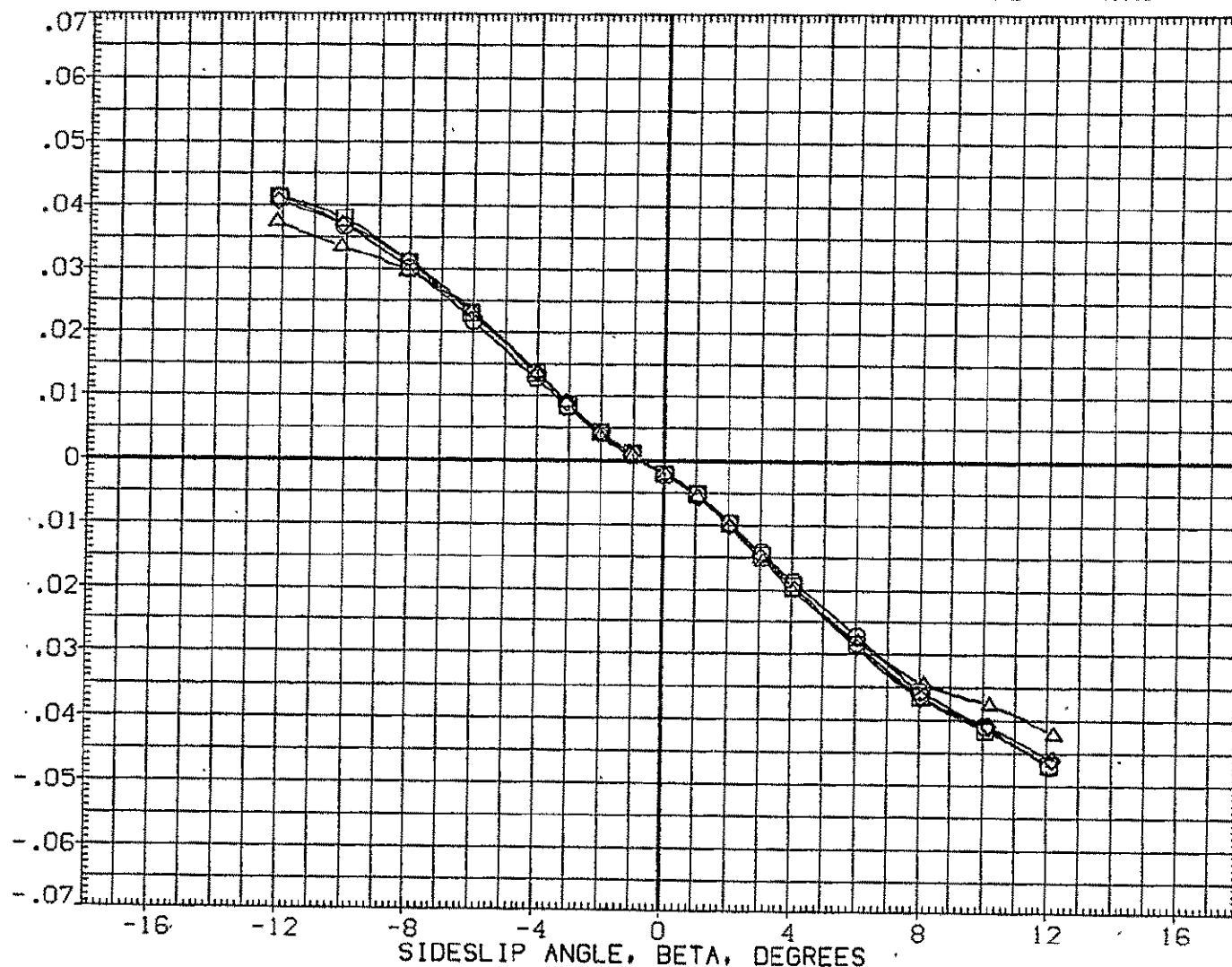


FIG.182 747+0RB(4 DEG),BASIC TAIL,FLAPS UP FERRY,ALPHA I=8(S=-3.2)

0RB

SYMBOL	MACH	PARAMETRIC VALUES				REFERENCE INFORMATION		
○	.300	ALPHA I	2.000	STAB	-3.200	SREF	5500.0000	SQ.FT.
□	.500	RUD-U	.000	RUD-L	.000	LREF	327.8000	IN.
◇	.600	ELV-IB	.000	ELV-OB	3.000	BREF	2348.0000	IN.
△	.700	S1-2	.000	S3-4	.000	XMRP	-1339.9100	IN. -XC
		S5-6	.000	IORB	4.000	YMRP	.0000	IN. YC
						ZMRP	190.7500	IN. ZC
						SCALE	.0300	

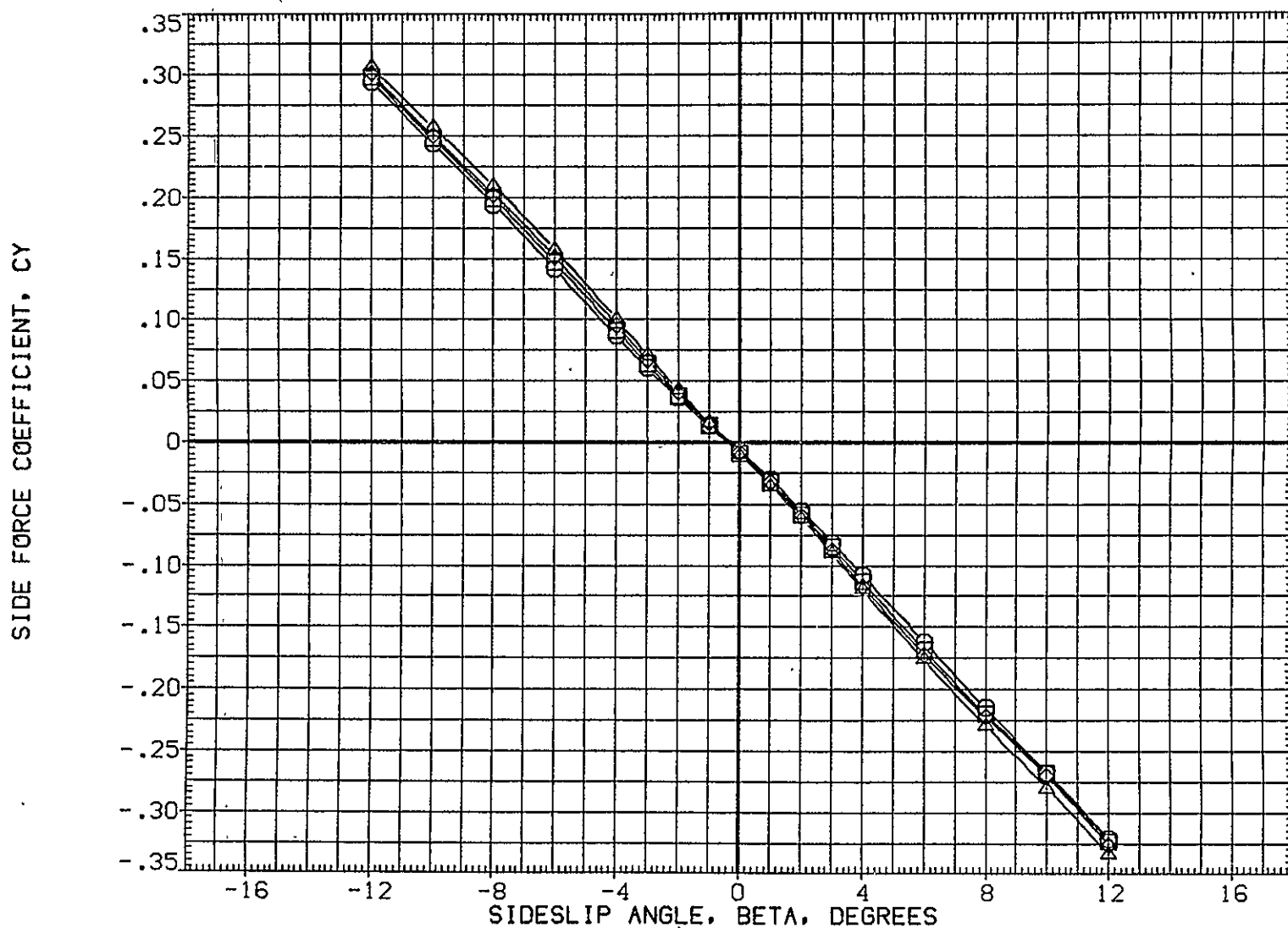


FIG.183 747+ORB(4 DEG)+TIP FINS,FLAPS UP FERRY,ALPHA I=2(S=-3.2)

TOTAL

PAGE 650

CA5 K1 F0 H15.6 V9.1 (PLUS. ORB TC5 AT38.3)(RGM113)

SYMBOL	MACH	PARAMETRIC VALUES
○	.300	ALPHA1 2.000 STAB -3.200
□	.500	RUD-U .000 RUD-L .000
◇	.600	ELV-1B .000 ELV-OB 3.000
△	.700	S1-2 .000 S3-4 .000
		S5-6 .000 IORB 4.000

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

YAWING MOMENT COEFFICIENT, CLN, (STABILITY AXIS)

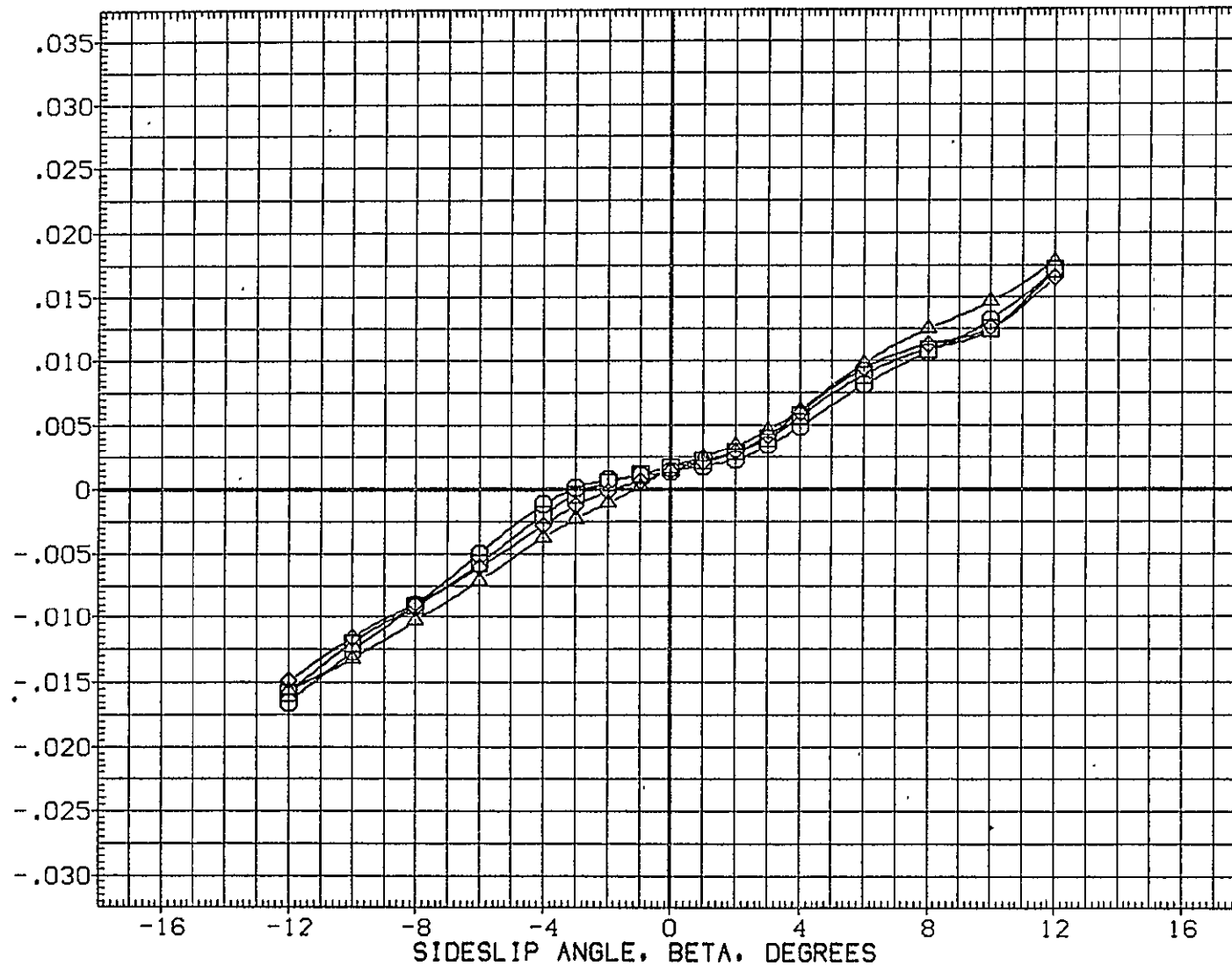


FIG.183 747+ORB(4 DEG)+TIP FINS,FLAPS UP FERRY,ALPHA1=2(S=-3.2)

TOTAL

SYMBOL	MACH	PARAMETRIC VALUES
○	.300	ALPHA I 2.000 STAB -3.200
□	.500	RUD-U .000 RUD-L .000
◇	.600	ELV-1B .000 ELV-0B 3.000
△	.700	S1-2 .000 S3-4 .000
		S5-6 .000 10RB 4.000

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XM RP	1339.9100	IN. XC
YM RP	.0000	IN. YC
ZM RP	190.7500	IN. ZC
SCALE	.0300	

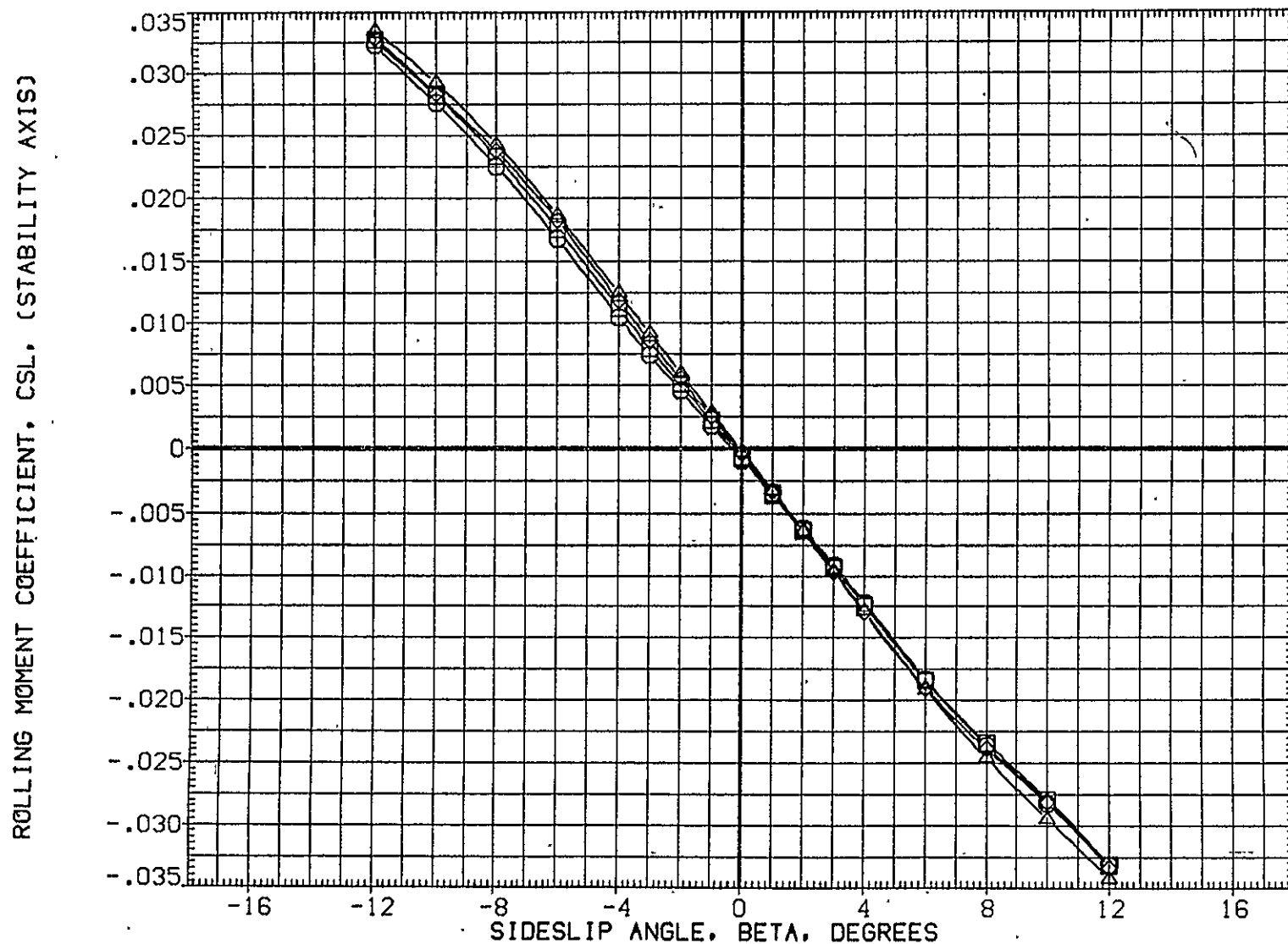


FIG.183 747+0RB(4 DEG)+TIP FINS,FLAPS UP FERRY,ALPHA I=2(S=-3.2)

TOTAL

CA5 K1 FO H15.6 V9.1 MINUS ORB TC5 AT38.3 (BGM113)

SYMBOL	MACH	PARAMETRIC VALUES	REFERENCE INFORMATION
○	.300	ALPHA1 2.000 STAB -3.200	SREF 5500.0000 SQ.FT.
□	.500	RUD-U .000 RUD-L .000	LREF 327.8000 IN.
◇	.600	ELV-1B .000 ELV-OB 3.000	BREF 2348.0000 IN.
△	.700	S1-2 .000 S3-4 .000	XMRP 1339.9100 IN. XC
		S5-6 .000 10RB 4.000	YMRP .0000 IN. YC
			ZMRP 190.7500 IN. ZC
			SCALE .0300

INCREMENTAL SIDE FORCE COEFFICIENT(STABILITY AXIS), DCY

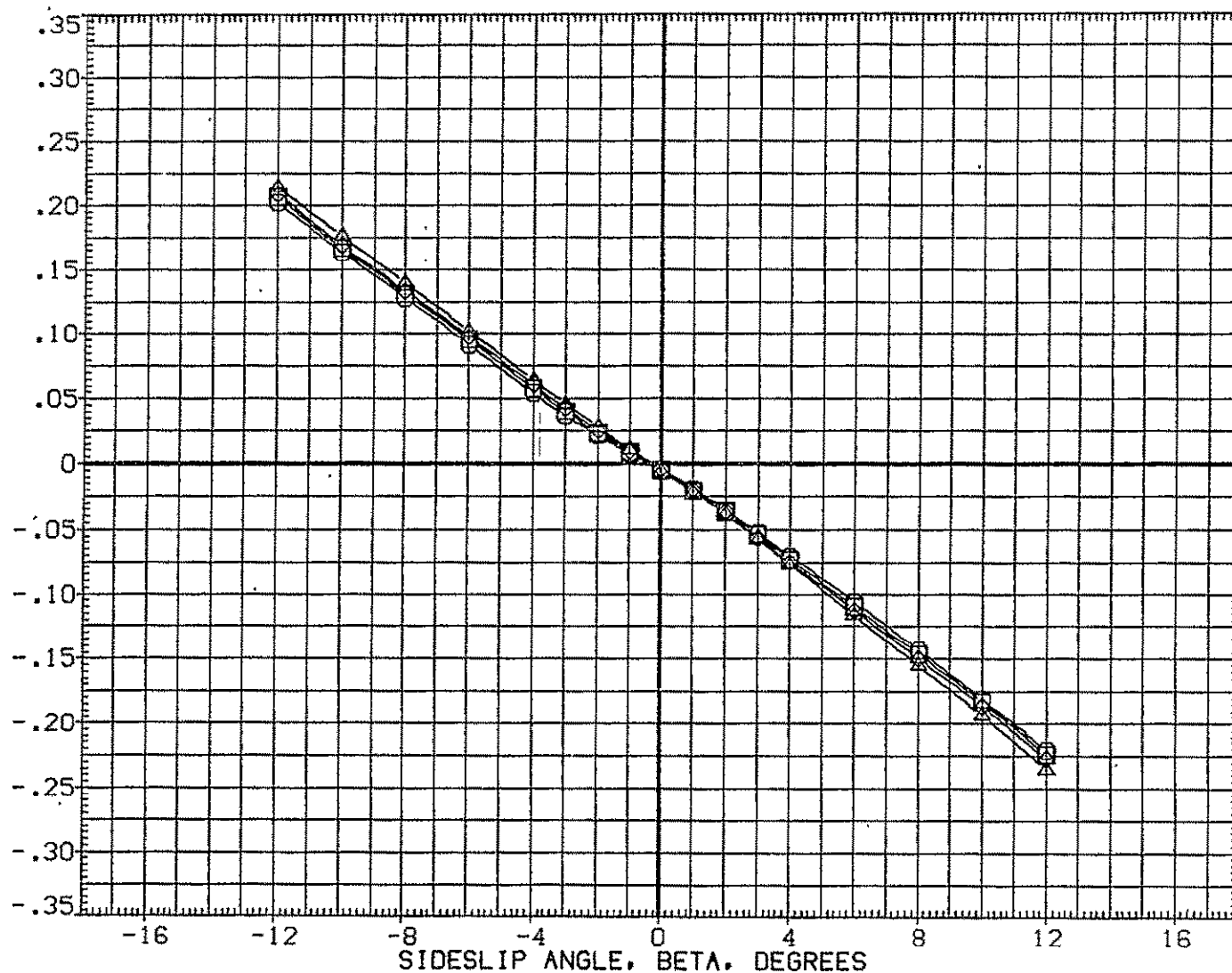
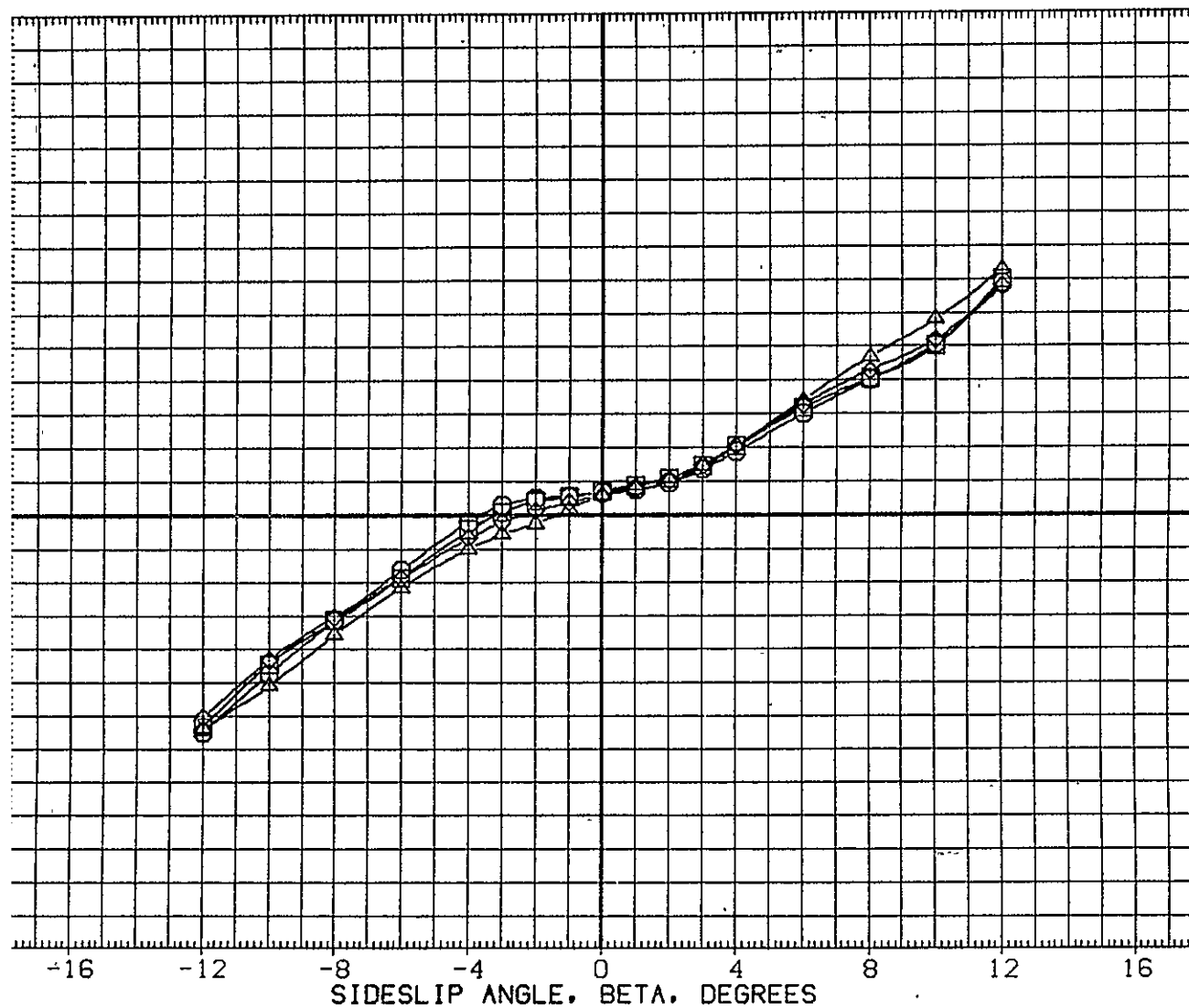


FIG.184 747+ORB(4 DEG)+TIP FINS,FLAPS UP FERRY,ALPHA1=2(S=-3.2)

747

PARAMETRIC VALUES			
ALPHAI	2.000	STAB	-3.200
RUD-U	.000	RUD-L	.000
ELV-1B	.000	ELV-OB	3.000
S1-2	.000	S3-4	.000
S5-6	.000	IORB	4.000

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN..XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	



747+ORB(4 DEG)+TIP FINS, FLAPS UP FERRY, ALPHAI=2(S=-3.2)

747

PAGE 654

CA5 K1 F0 H15.6 V9.1 MINUS ORB TC5 AT38.3 (BGM113)

SYMBOL	MACH	PARAMETRIC VALUES	REFERENCE INFORMATION
○	.300	ALPHA = 2.000 STAB -3.200	SREF 5500.0000 SQ.FT.
□	.500	RUD-U .000 RUD-L .000	LREF 327.8000 IN.
◇	.600	ELV-1B .000 ELV-OB 3.000	BREF 2348.0000 IN.
△	.700	S1-2 .000 S3-4 .000	XMRP 1339.9100 IN. XC
		S5-6 .000 IORB 4.000	YMRP .0000 IN. YC
			ZMRP 190.7500 IN. ZC
			SCALE .0300

INCREMENTAL ROLLING MOMENT COEFFICIENT (STABILITY AXIS), DCSL

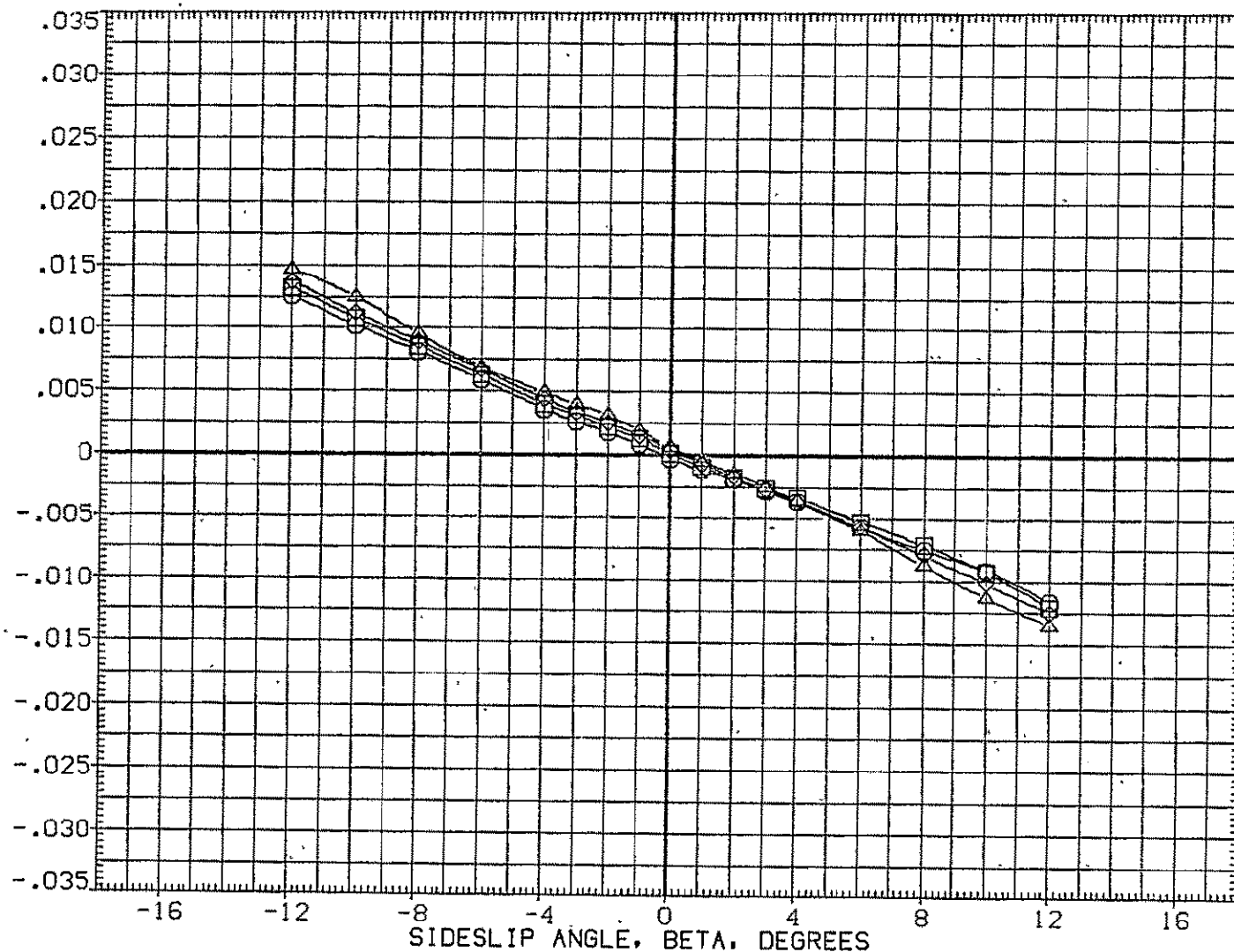


FIG.184 747+ORB(4 DEG)+TIP FINS,FLAPS UP FERRY,ALPHA=2(S=-3.2)

SYMBOL	MACH	PARAMETRIC VALUES
○	.149	ALPHA I 2.000 STAB. -3.200
□	.299	RUD-U .000 RUD-L .000
◇	.499	ELV-18 .000 ELV-08 3.000
△	.600	S1-2 .000 S3-4 .000
▽	.701	S5-6 .000 ICRB 4.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	-474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN. X0
YMRP	.0000	IN. Y0
ZMRP	375.0000	IN. Z0
SCALE	.0300	

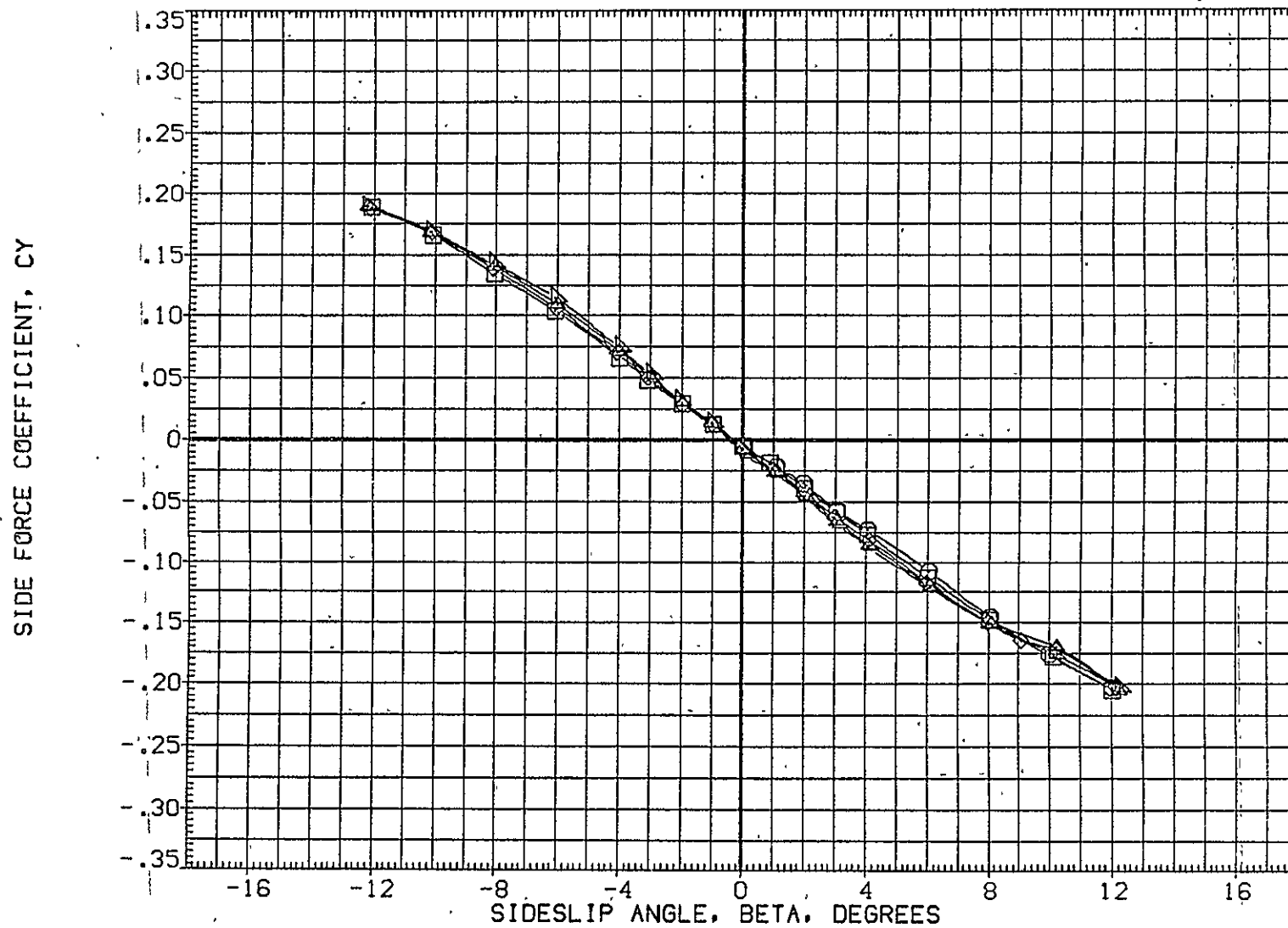


FIG.185 747+0RB(4 DEG)+TIP FINS,FLAPS UP FERRY,ALPHA I=2(S=-3.2)

0RB

CA5 ORB TC5 AT38.3 (PRES. K1 FO H15.6 V9.1)(XGM113)

SYMBOL	MACH	PARAMETRIC VALUES	REFERENCE INFORMATION
○	.149	ALPHA1 2.000 STAB -3.200	SREF 2690.0000 SQ.FT.
□	.299	RUD-U .000 RUD-L .000	LREF 474.8100 IN.
◇	.499	ELV-1B .000 ELV-OB 3.000	BREF 936.6800 IN.
△	.600	S1-2 .000 S3-4 .000	XMRP 1109.0000 IN. X0
▽	.701	S5-6 .000 ICRB 4.000	YMRP .0000 IN. Y0
			ZMRP 375.0000 IN. Z0
			SCALE .0300

YAWING MOMENT COEFFICIENT, CLN. (STABILITY AXIS)

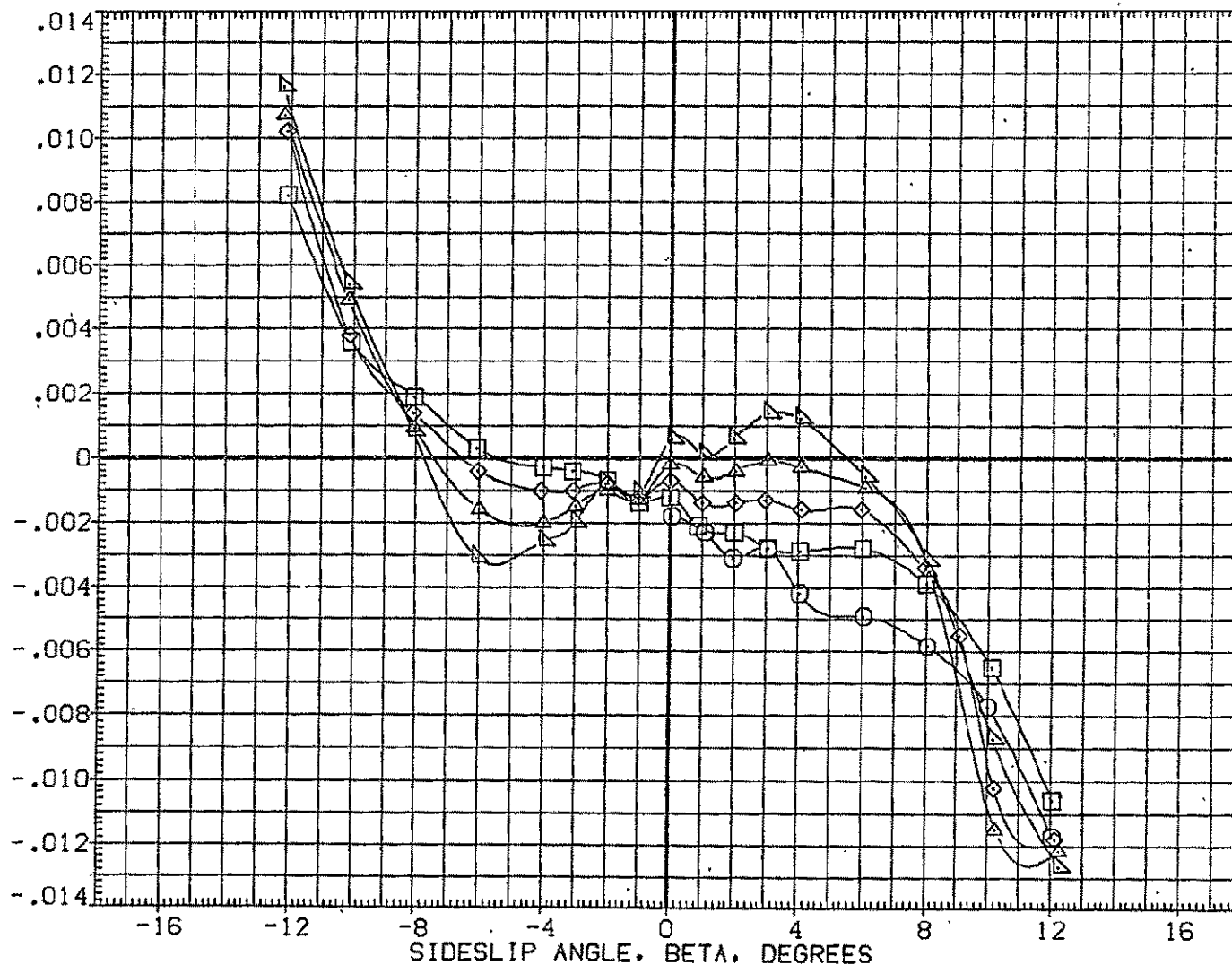


FIG.185 747+ORB(4 DEG)+TIP FINS,FLAPS UP FERRY,ALPHA1=2(S=-3.2)

ORB

SYMBOL
 ○
 □
 △
 ◇
 ▼

MACH	PARAMETRIC VALUES
.149	ALPHA1 2.000 STAB -3.200
.299	RUD-U .000 RUD-L .000
.499	ELV-1B .000 ELV-0B 3.000
.600	S1-2 .000 S3-4 .000
.701	S5-6 .000 10RB 4.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN. X0
YMRP	.0000	IN. Y0
ZMRP	375.0000	IN. Z0
SCALE	.0300	

ROLLING MOMENT COEFFICIENT, CSL, (STABILITY AXIS)

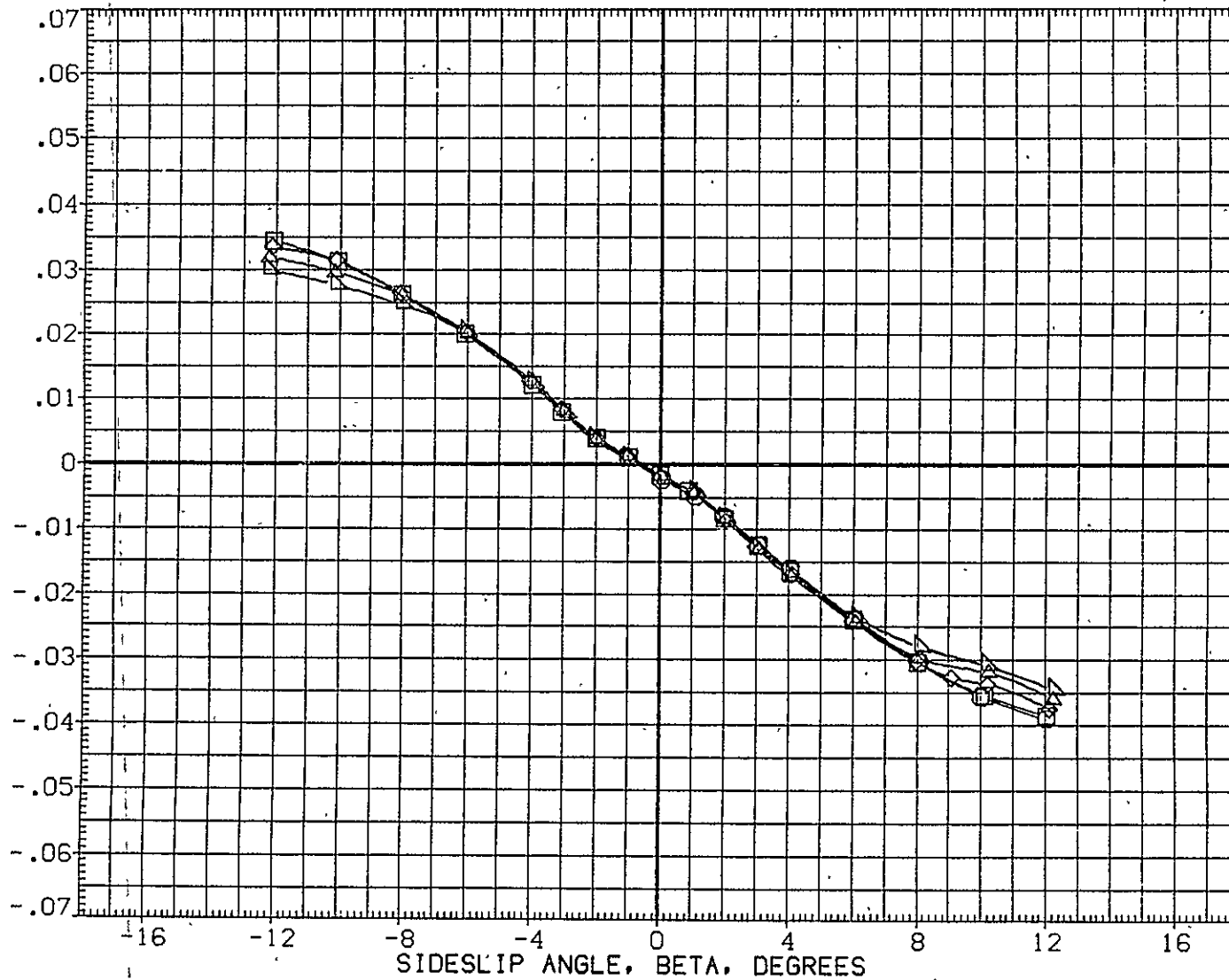


FIG.185 747+0RB(4 DEG)+TIP FINS,FLAPS UP FERRY,ALPHA1=2(S=-3.2)

ORB

CA5 K1 F0 H15.6 V9.1 (PLUS. ORB TC5 AT38.3)(RGM114)

SYMBOL

○
□
◇
△
▽

MACH

.150
.300
.500
.600
.700

PARAMETRIC VALUES

ALPHA1 6.000 STAB -3.200
RUD-U .000 RUD-L .000
ELV-1B .000 ELV-OB 3.000
S1-2 .000 S3-4 .000
S5-6 .000 IORB 4.000

REFERENCE INFORMATION

SREF 5500.0000 SQ.FT.
LREF 327.6000 IN.
BREF 2348.0000 IN.
XMRP 1339.9100 IN. XC
YMRP .0000 IN. YC
ZMRP 190.7500 IN. ZC
SCALE .0300

SIDE FORCE COEFFICIENT, CY

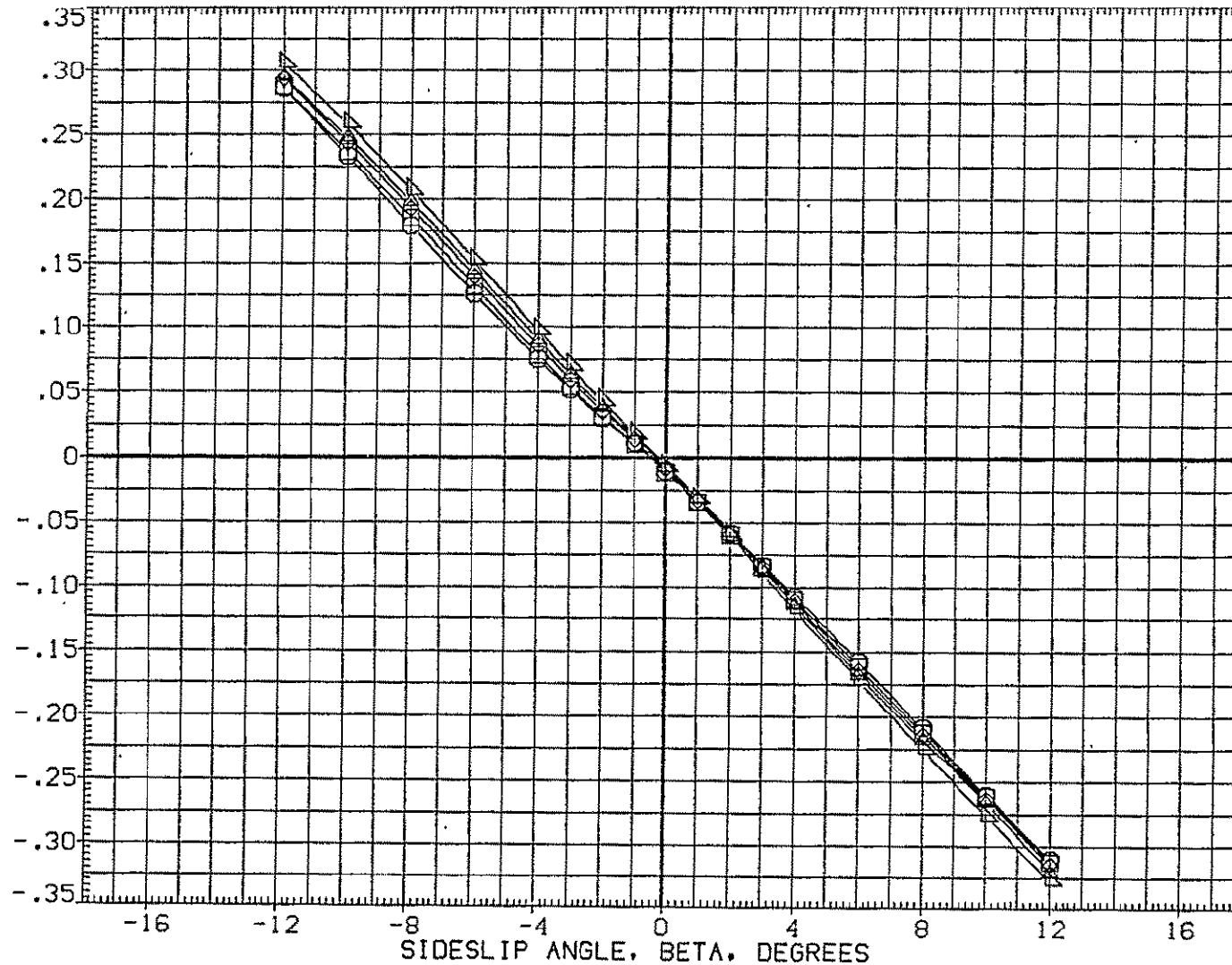


FIG.186 747+ORB(4 DEG)+TIP FINS,FLAPS UP FERRY,ALPHA1=6(S=-3.2)

TOTAL

SYMBOL	MACH	PARAMETRIC VALUES				REFERENCE INFORMATION		
○	.150	ALPHA1	6.000	STAB	-3.200	SREF	5500.0000	SQ.FT.
□	.300	RUD-U	.000	RUD-L	.000	LREF	327.8000	IN.
◇	.500	ELV-1B	.000	ELV-OB	3.000	BREF	2348.0000	IN.
△	.600	S1-2	.000	S3-4	.000	XMRP	1339.9100	IN. XC
▽	.700	S5-6	.000	ORB	4.000	YMRP	.0000	IN. YC
						ZMRP	190.7500	IN. ZC
						SCALE	.0300	

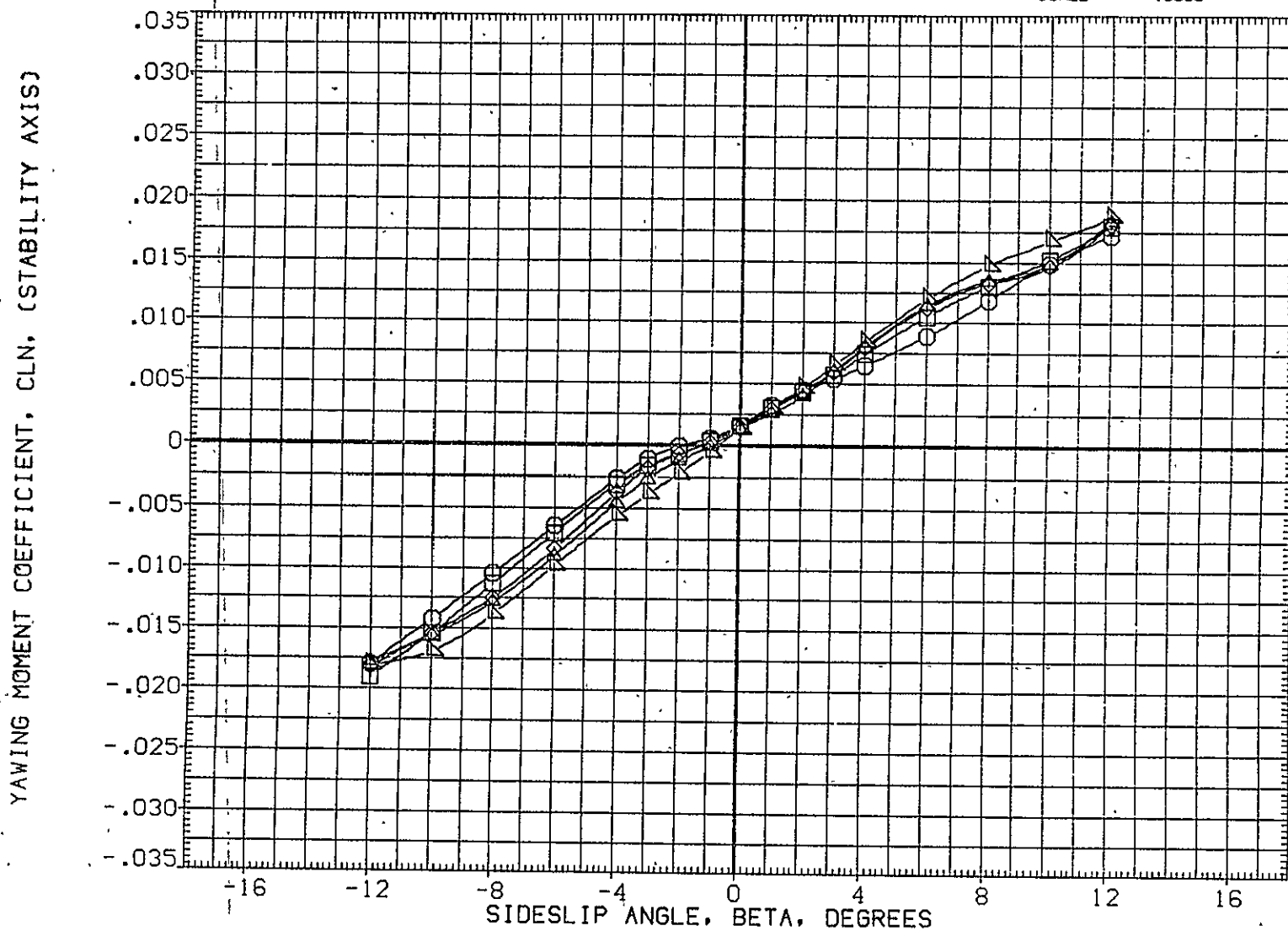


FIG.186 747+ORB(4 DEG)+TIP FINS,FLAPS UP FERRY,ALPHA1=6(S=-3.2)

TOTAL

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CA5 K1 FO H15.6 V9.1 (PLUS. ORB TC5 AT38.3)(RGM114)

SYMBOL	MACH	PARAMETRIC VALUES	REFERENCE INFORMATION
○	.150	ALPHA1 6.000 STAB -3.200	SREF 5500.0000 SQ.FT.
□	.300	RUD-U .000 RUD-L .000	LREF 327.8000 IN.
◇	.500	ELV-1B .000 ELV-OB 3.000	BREF 2348.0000 IN.
△	.600	S1-2 .000 S3-4 .000	XMRP 1339.9100 IN. XC
▽	.700	SS-6 .000 IORB 4.000	YMRP .0000 IN. YC
			ZMRP 190.7500 IN. ZC
			SCALE .0300

ROLLING MOMENT COEFFICIENT, CSL, (STABILITY AXIS)

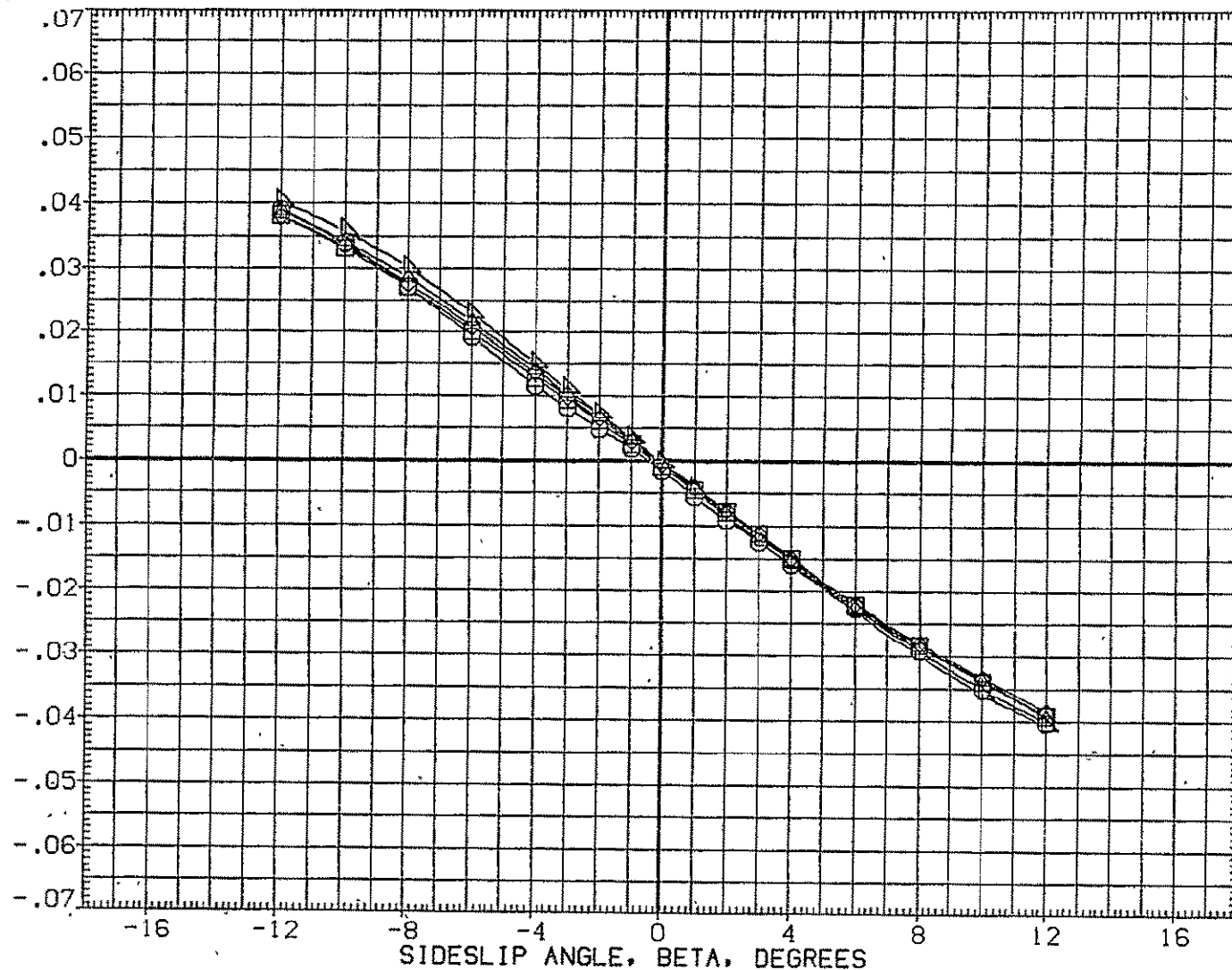


FIG.186 747+ORB(4 DEG)+TIP FINS,FLAPS UP FERRY,ALPHA1=6(S=-3.2)

TOTAL

SYMBOL	MACH	PARAMETRIC VALUES				REFERENCE INFORMATION		
○	.150	ALPHA I	6.000	STAB	-3.200	SREF	5500.0000	50. FT.
□	.300	RUD-U	.000	RUD-L	.000	LREF	327.8000	IN.
◇	.500	ELV-1B	.000	ELV-0B	3.000	BREF	2348.0000	IN.
△	.600	S1-2	.000	S3-4	.000	XMRP	1339.9100	IN. XC
▽	.700	S5-6	.000	10RB	4.000	YMRP	.0000	IN. YC
						ZMRP	190.7500	IN. ZC
						SCALE	.0300	

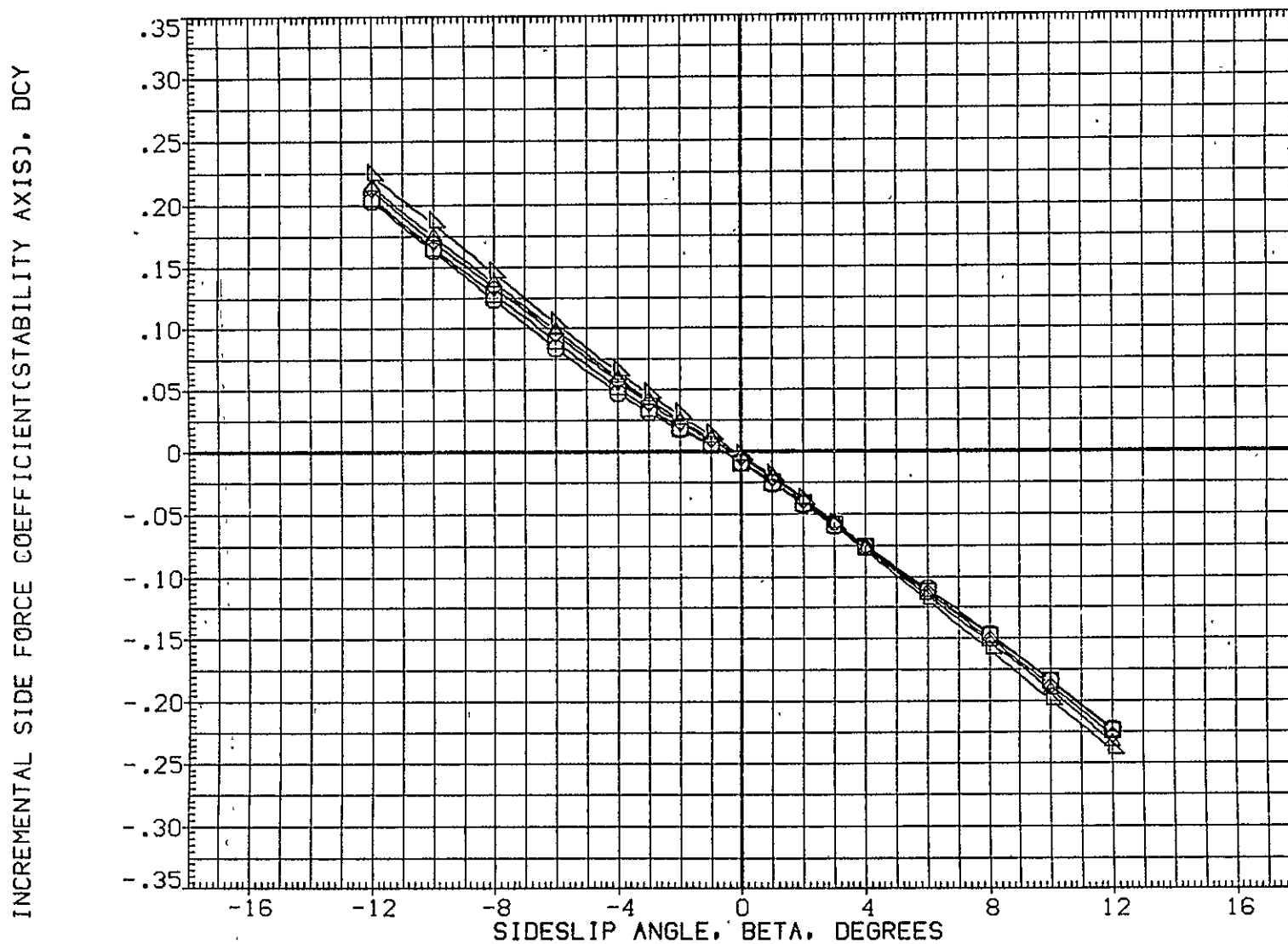


FIG.187 747+0RB(4 DEG)+TIP FINS,FLAPS UP FERRY,ALPHA I=6(S=-3.2)

747

CA5 K1 F0 H15.6 V9.1 MINUS ORB TC5 AT38.3 (BGM114)

SYMBOL	MACH	PARAMETRIC VALUES	REFERENCE INFORMATION
○	.150	ALPHA1 6.000 STAB -3.200	SREF 5500.0000 SQ.FT.
□	.300	RUD-U .000 RUD-L .000	LREF 327.8000 IN.
◇	.500	ELV-IB .000 ELV-OB 3.000	BREF 2348.0000 IN.
△	.600	S1-2 .000 S3-4 .000	XMRP 1339.9100 IN. XC
▽	.700	S5-6 .000 TORB 4.000	YMRP .0000 IN. YC
			ZMRP 190.7500 IN. ZC
			SCALE .0300

INCREMENTAL YAWING MOMENT COEFFICIENT (STABILITY AXIS), DCLN

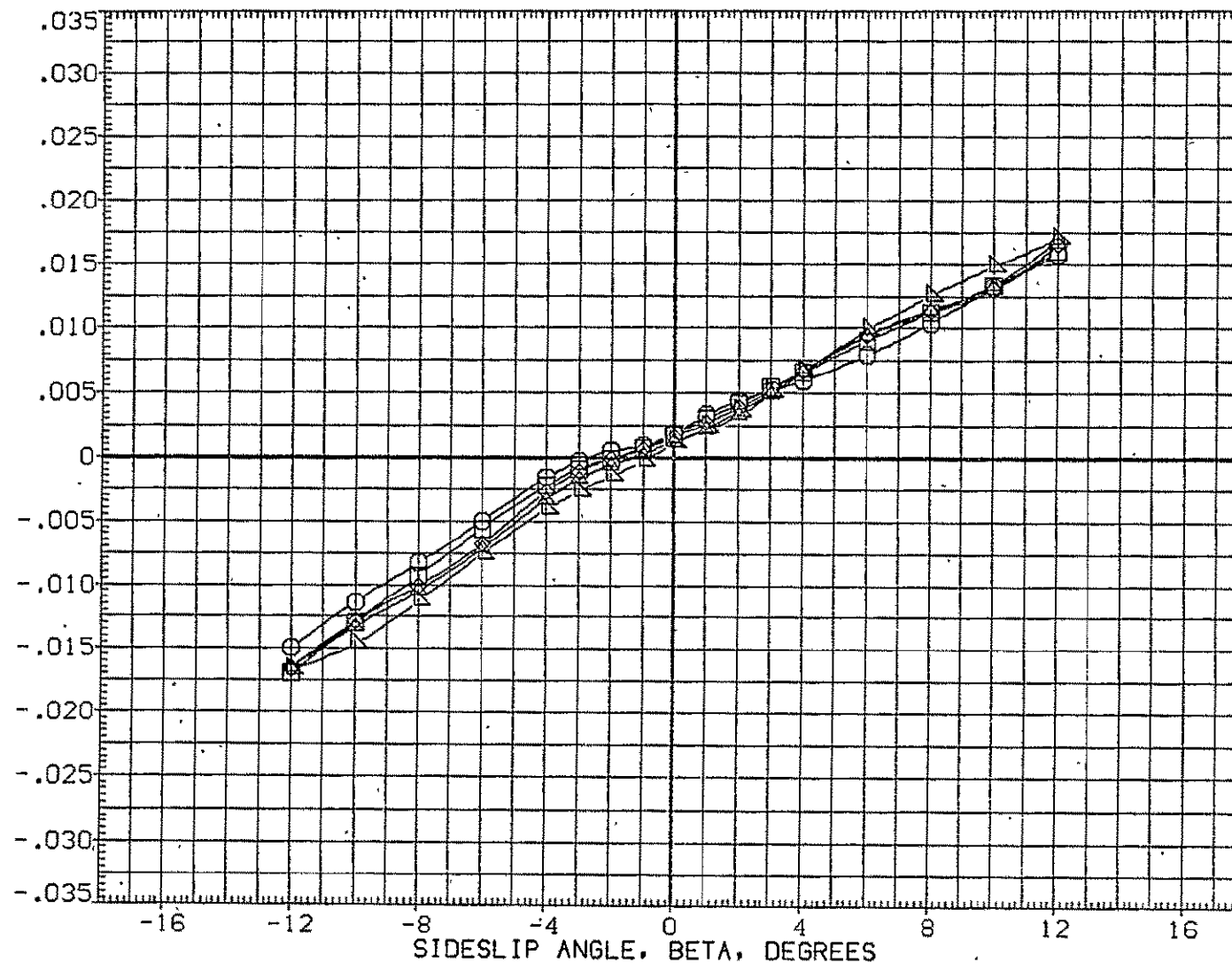


FIG.187 747+ORB(4 DEG)+TIP FINS, FLAPS UP FERRY, ALPHA1=6(S=-3.2)

747

SYMBOL
○ □ ◇ △ ▽

MACH	PARAMETRIC VALUES
.150	ALPHA1 6.000 STAB -3.200
.300	RUD-U .000 RUD-L .000
.500	ELV-18 .000 ELV-08 3.000
.600	S1-2 .000 S3-4 .000
.700	S5-6 .000 10RB 4.000

REFERENCE INFORMATION		
SREF	5500.0000	50.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

INCREMENTAL ROLLING MOMENT COEFFICIENT(STABILITY AXIS), DCSL

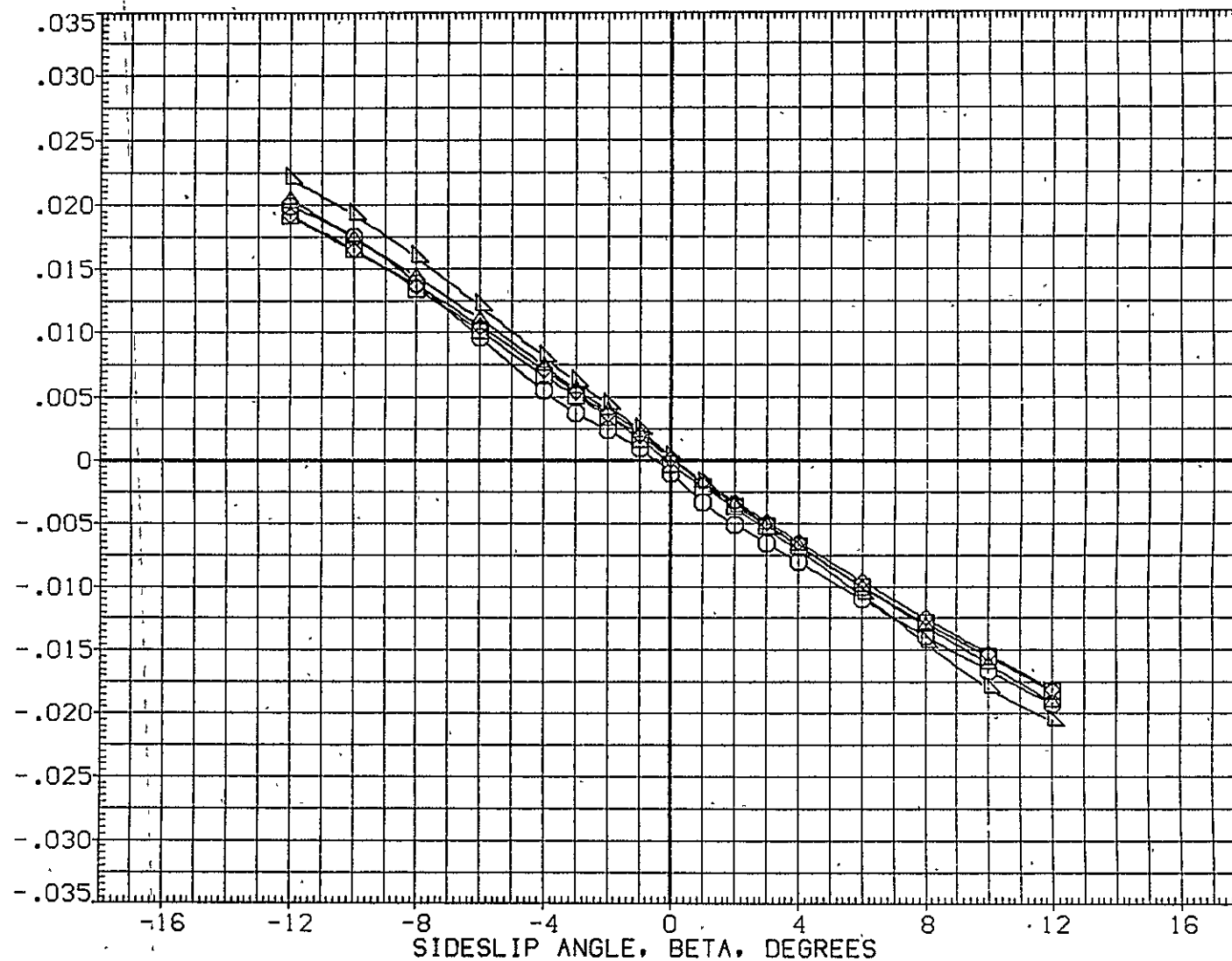


FIG.187 747+0RB(4 DEG)+TIP FINS,FLAPS UP FERRY,ALPHA1=6(S=-3.2)

747

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CA5 ORB TC5 AT38.3 (PRES. K1 FO H15.6 V9.1)(XGM114)

SYMBOL	MACH	PARAMETRIC VALUES	REFERENCE INFORMATION
○	.149	ALPHA I 6.000 STAB -3.200	SREF 2690.0000 SQ.FT.
□	.299	RUD-U .000 RUD-L .000	LREF 474.8100 IN.
◇	.500	ELV-1B .000 ELV-OB 3.000	BREF 936.6800 IN.
△	.600	S1-2 .000 S3-4 .000	XMRP 1109.0000 IN. X0
▽	.699	S5-6 .000 TORB 4.000	YMRP .0000 IN. Y0
			ZMRP 375.0000 IN. Z0
			SCALE .0300

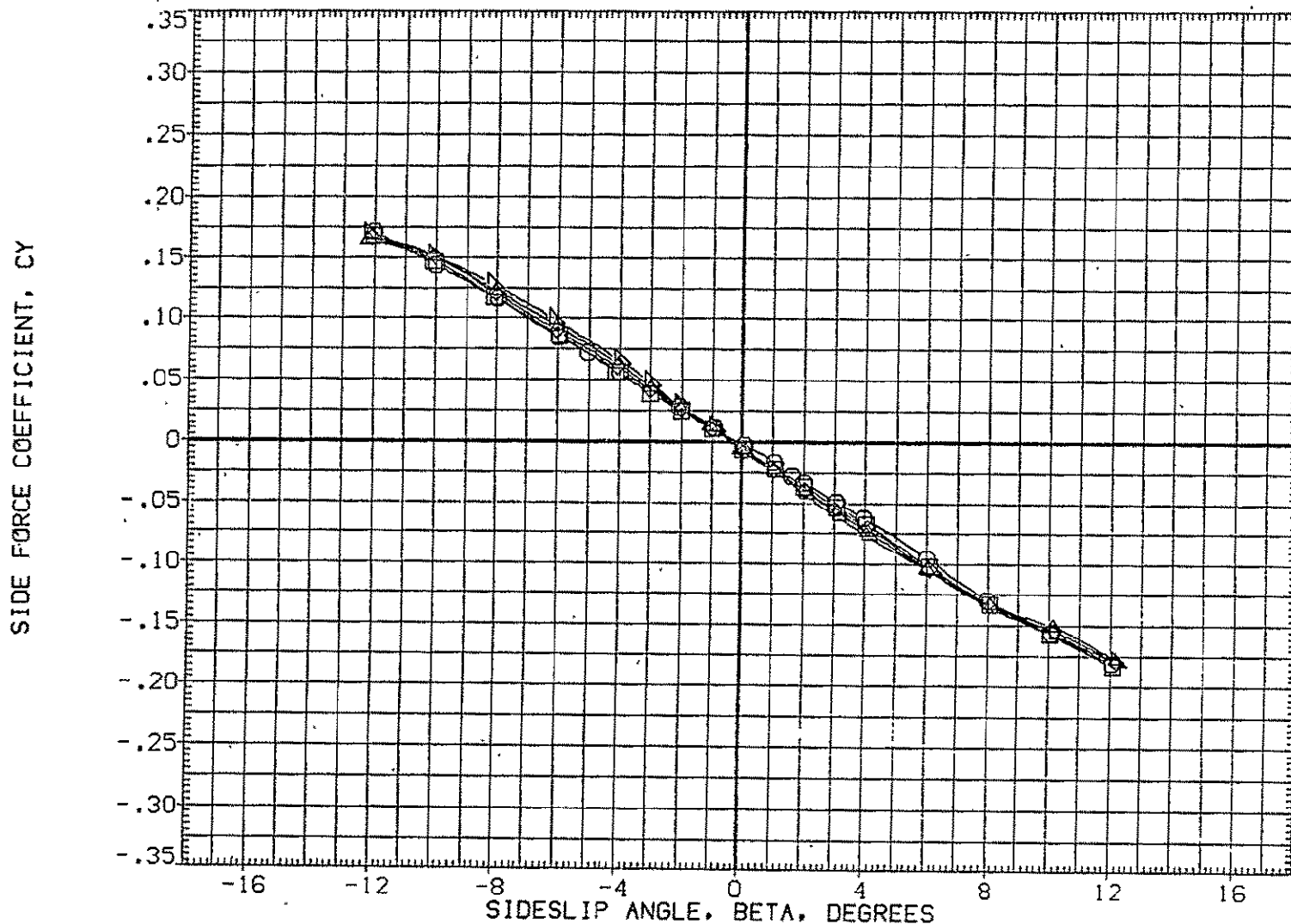


FIG.188 747+ORB(4 DEG)+TIP FINS,FLAPS UP FERRY,ALPHA I=6(S=-3.2)

ORB

SYMBOL	MACH	PARAMETRIC VALUES			
○	.149	ALPHA1	6.000	STAB	-3.200
□	.299	RUD-U	.000	RUD-L	.000
◇	.500	ELV-1B	.000	ELV-0B	3.000
△	.600	S1-2	.000	S3-4	.000
▽	.699	S5-6	.000	10RB	4.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XM RP	1109.0000	IN. X0
YM RP	.0000	IN. Y0
ZM RP	375.0000	IN. Z0
SCALE	.0300	

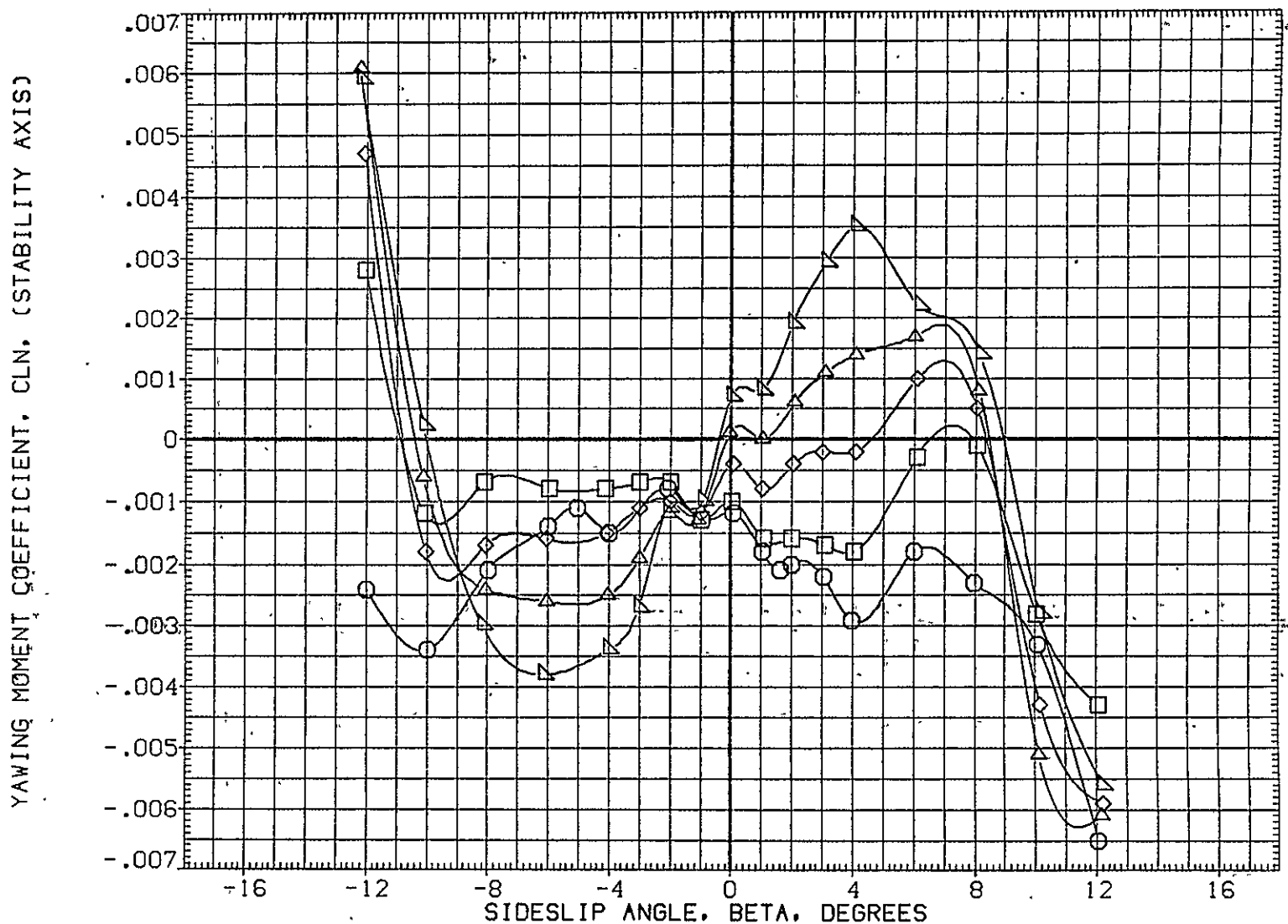


FIG.188 747+0RB(4 DEG)+TIP FINS,FLAPS UP FERRY,ALPHA1=6(S=-3.2)

0RB

CA5 ORB TC5 AT38.3 (PRES. KI FO H15.6 V9.1)(XGM114)

SYMBOL	MACH	PARAMETRIC VALUES				REFERENCE INFORMATION		
		ALPHA I	6.000	STAB	-3.200	SREF	2690.0000	SQ.FT.
○	.299	RUD-U	.000	RUD-L	.000	LREF	474.8100	IN.
□	.500	ELV-1B	.000	ELV-0B	3.000	BREF	936.6800	IN.
◇	.600	SI-2	.000	S3-4	.000	XMRP	1109.0000	IN. X0
△	.699	S5-6	.000	ICRB	4.000	YMRP	.0000	IN. Y0
▽						ZMRP	375.0000	IN. Z0
						SCALE	.0300	

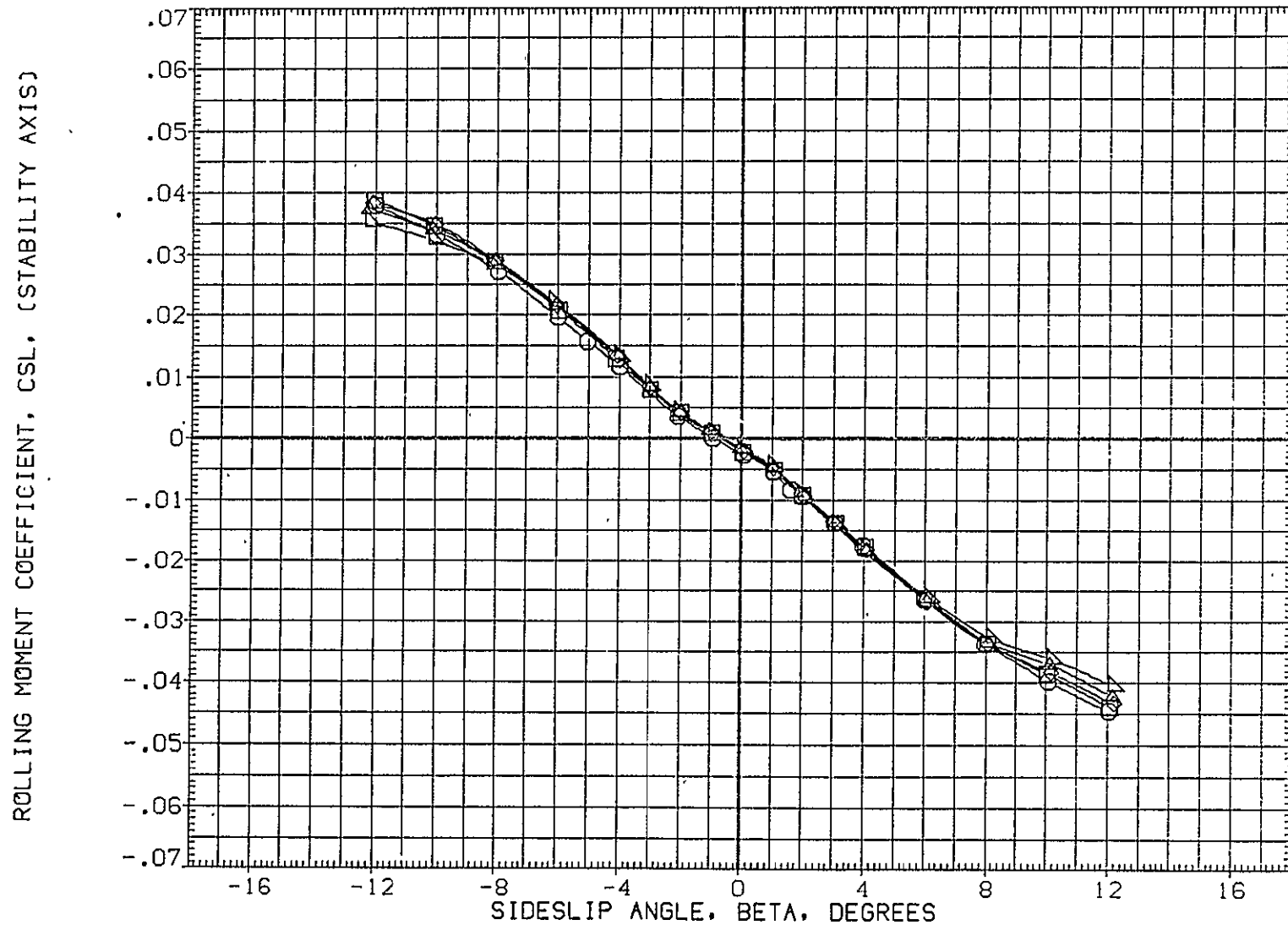


FIG.188 747+ORB(4 DEG)+TIP FINS,FLAPS UP FERRY,ALPHA I=6(S=-3.2)

ORB

SYMBOL	MACH	PARAMETRIC VALUES				REFERENCE INFORMATION		
○	.300	ALPHA1	8.000	STAB	-3.200	SREF	5500.0000	SQ.FT.
□	.500	RUD-U	.000	RUD-L	.000	LREF	327.8000	IN.
◇	.600	ELV-1B	.000	ELV-0B	3.000	BREF	2348.0000	IN.
△	.700	S1-2	.000	S3-4	.000	XMRP	1339.9100	IN. XC
		S5-6	.000	10RB	4.000	YMRP	.0000	IN. YC
						ZMRP	190.7500	IN. ZC
						SCALE	.0300	

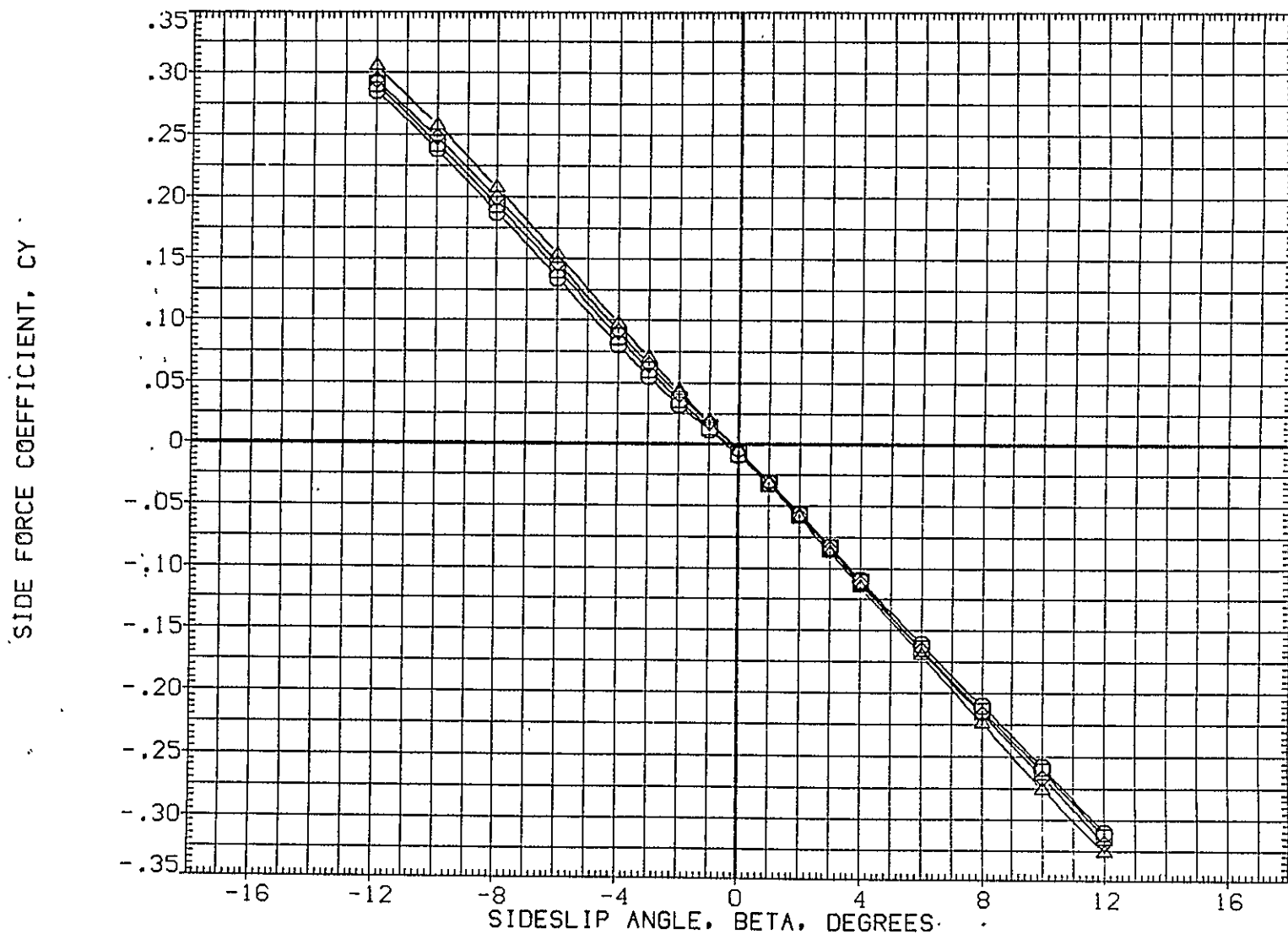


FIG.189 747+0RB(4 DEG)+TIP FINS,FLAPS UP FERRY,ALPHA1=8(S=-3.2)

TOTAL

CA5 K1 FO H15.6 V9.1 (PLUS. ORB TC5 AT38.3)(RGM115)

SYMBOL	MACH	PARAMETRIC VALUES				REFERENCE INFORMATION		
○	.300	ALPHA I	8.000	STAB	-3.200	SREF	5500.0000	SQ.FT.
□	.500	RUD-U	.000	RUD-L	.000	LREF	327.8000	IN.
◇	.600	ELV-1B	.000	ELV-0B	3.000	BREF	2348.0000	IN.
△	.700	S1-2	.000	S3-4	.000	XMRP	1339.9100	IN. XC
		S5-6	.000	ICRB	4.000	YMRP	.0000	IN. YC
						ZMRP	190.7500	IN. ZC
						SCALE	.0300	

YAWING MOMENT COEFFICIENT, CLN, (STABILITY AXIS)

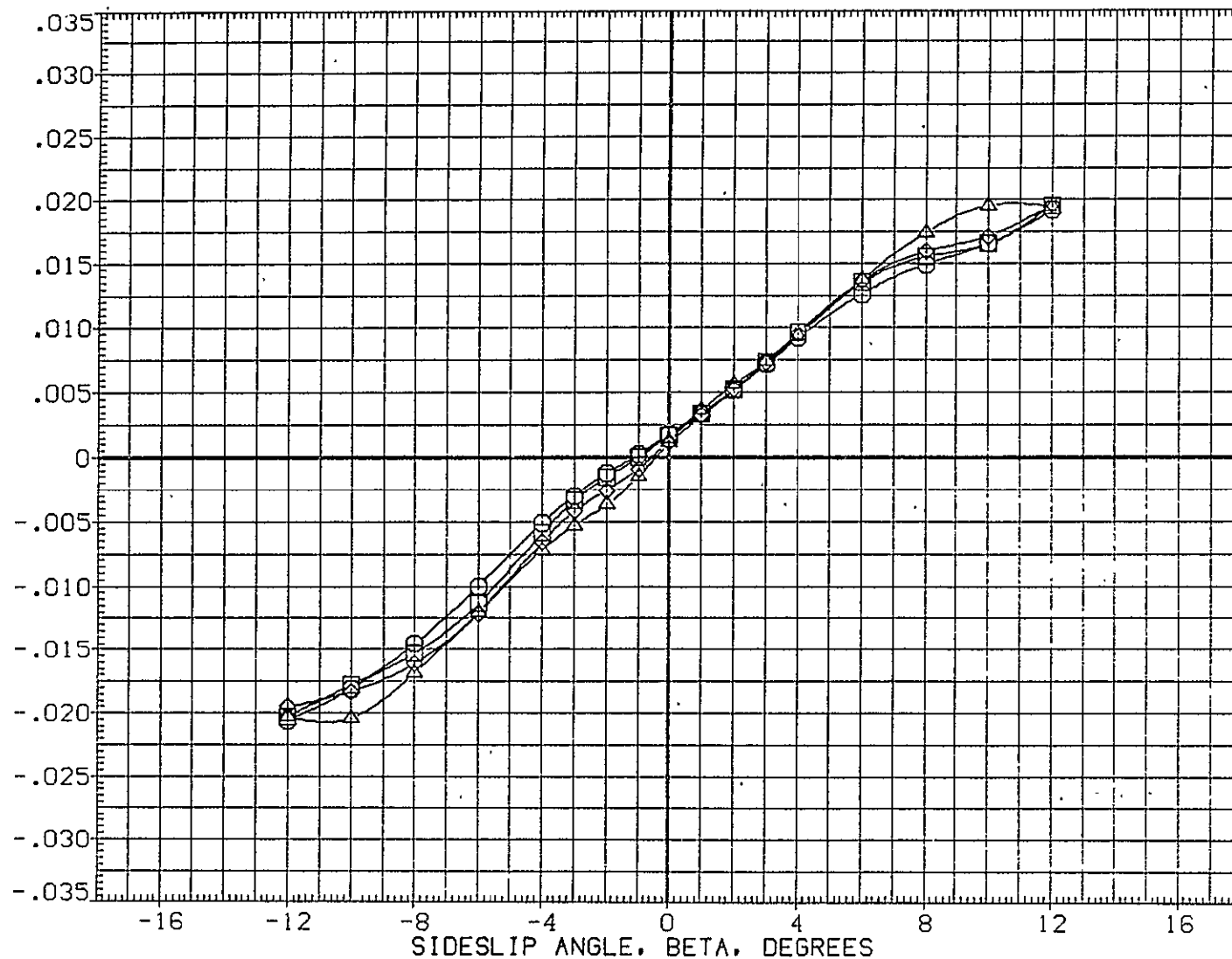


FIG.189 747+ORB(4 DEG)+TIP FINS,FLAPS UP FERRY,ALPHA I=8(S=-3.2)

TOTAL

SYMBOL

○
□
◇
△

MACH

.300 ALPHAI
.500 RUD-U
.600 ELV-1B
.700 S1-2
S5-6

PARAMETRIC VALUES

8.000 STAB -3.200
.000 RUD-L .000
.000 ELV-OB 3.000
.000 S3-4 .000
.000 1ORB 4.000

REFERENCE INFORMATION

SREF 5500.0000 SQ.FT.
LREF 327.8000 IN.
BREF 2348.0000 IN.
XMRP 1339.9100 IN. XC
YMRP .0000 IN. YC
ZMRP 190.7500 IN. ZC
SCALE .0300

ROLLING MOMENT COEFFICIENT, CSL, (STABILITY AXIS)

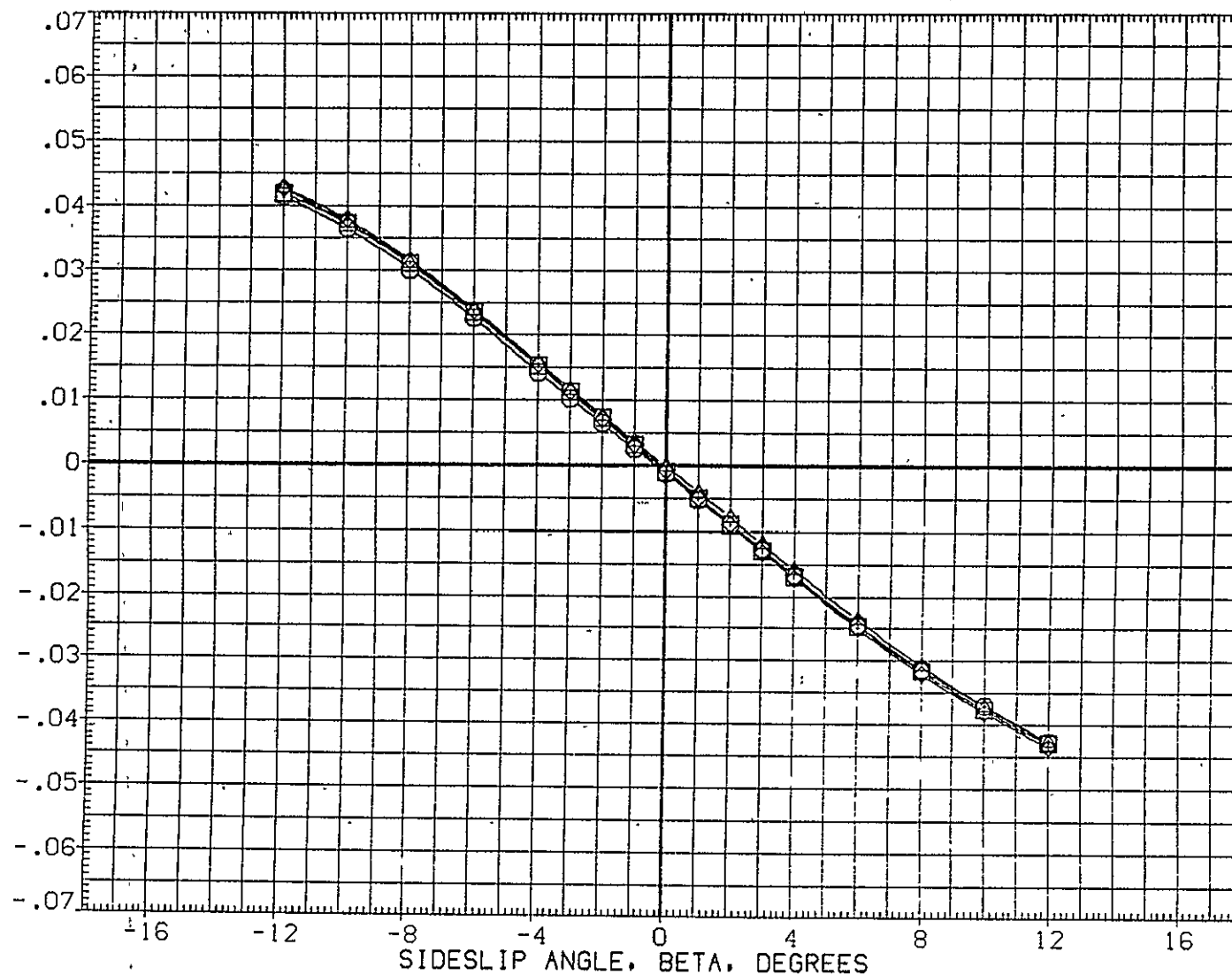


FIG.189 747+0RB(4 DEG)+TIP FINS,FLAPS UP FERRY,ALPHAI=8(S=-3.2)

TOTAL

PAGE

670

CA5 K1 FO H15.6 V9.1 MINUS 0RB TC5 AT38.3 (BGM115)

SYMBOL	MACH	PARAMETRIC VALUES			
○	.300	ALPHA I	8.000	STAB	-3.200
□	.500	RUD=U	.000	RUD=L	.000
◇	.600	ELV-1B	.000	ELV-0B	3.000
△	.700	S1-2	.000	S3-4	.000
		S5-6	.000	10RB	4.000

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

INCREMENTAL SIDE FORCE COEFFICIENT(STABILITY AXIS), DCY

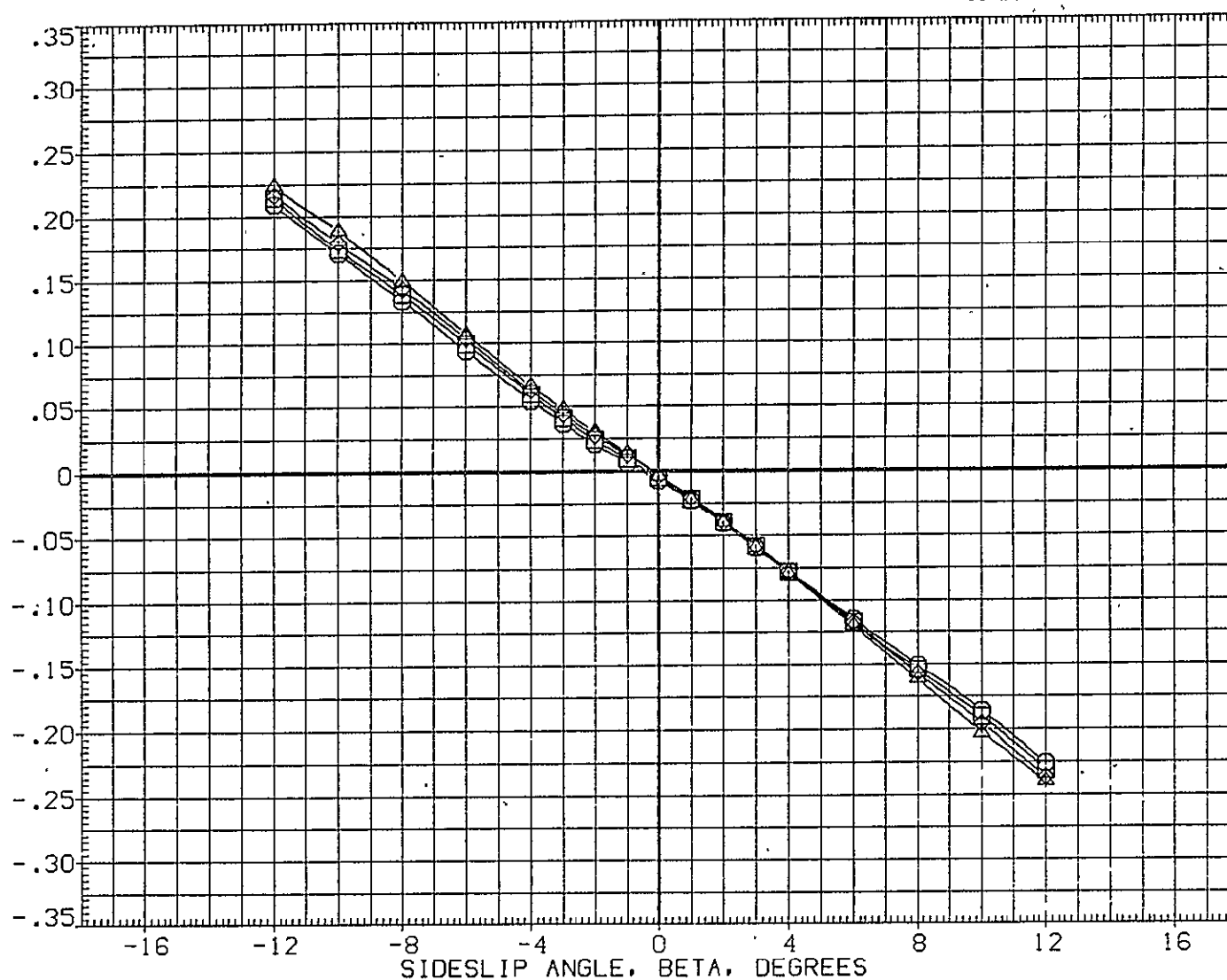


FIG.190 747+0RB(4 DEG)+TIP FINS,FLAPS UP FERRY,ALPHA I=8(S=-3.2)

747

SYMBOL	MACH	PARAMETRIC VALUES	REFERENCE INFORMATION
○	.300	ALPHA I 8.000 STAB -3.200	SREF 5500.0000 SQ.FT.
□	.500	RUD-U .000 RUD-L .000	LREF 327.8000 IN.
◇	.600	ELV-1B .000 ELV-OB 3.000	BREF 2348.0000 IN.
△	.700	S1-2 .000 S3-4 .000	XMRP 1339.9100 IN. XC
		S5-6 .000 IORB 4.000	YMRP .0000 IN. YC
			ZMRP 190.7500 IN. ZC
			SCALE .0300

INCREMENTAL YAWING MOMENT COEFFICIENT(STABILITY AXIS), DCLN

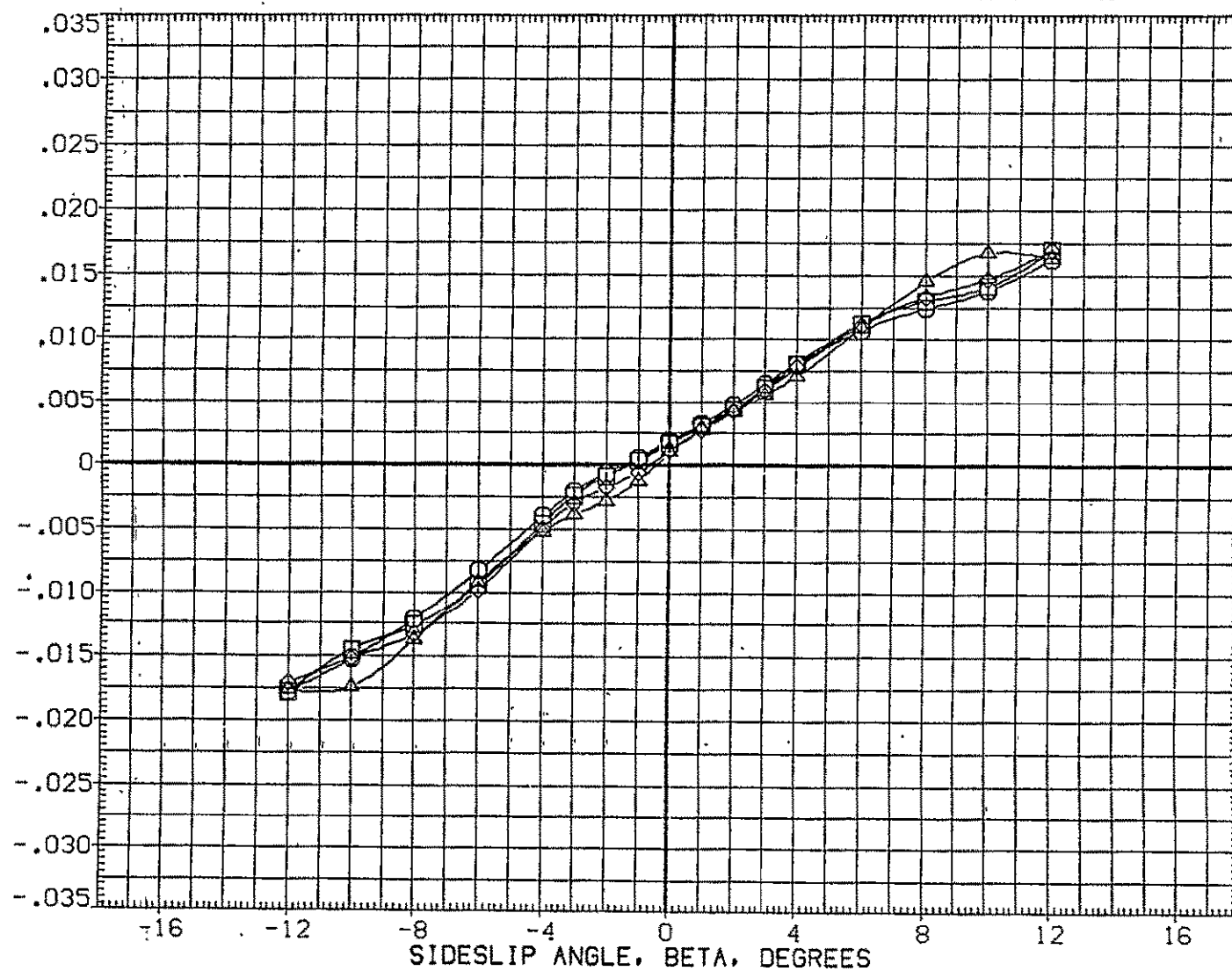


FIG.190 747+ORB(4 DEG)+TIP FINS,FLAPS UP FERRY,ALPHA I=8(S=-3.2)

747

PAGE 672

CA5 K1 F0 H15.6 V9.1 MINUS 0RB TC5 AT38.3 (BGM115)

SYMBOL	MACH	PARAMETRIC VALUES	REFERENCE INFORMATION
○	.300	ALPHA1 8.000 STAB -3.200	SREF 5500.0000 SQ.FT.
□	.500	RUD-U .000 RUD-L .000	LREF 327.9000 IN.
◇	.600	ELV-1B .000 ELV-0B 3.000	BREF 2348.0000 IN.
△	.700	S1-2 .000 S3-4 .000	XMRP 1339.9100 IN. XC
		S5-6 .000 10RB 4.000	YMRP .0000 IN. YC
			ZMRP 190.7500 IN. ZC
			SCALE .0300

INCREMENTAL ROLLING MOMENT COEFFICIENT (STABILITY AXIS), DCSL

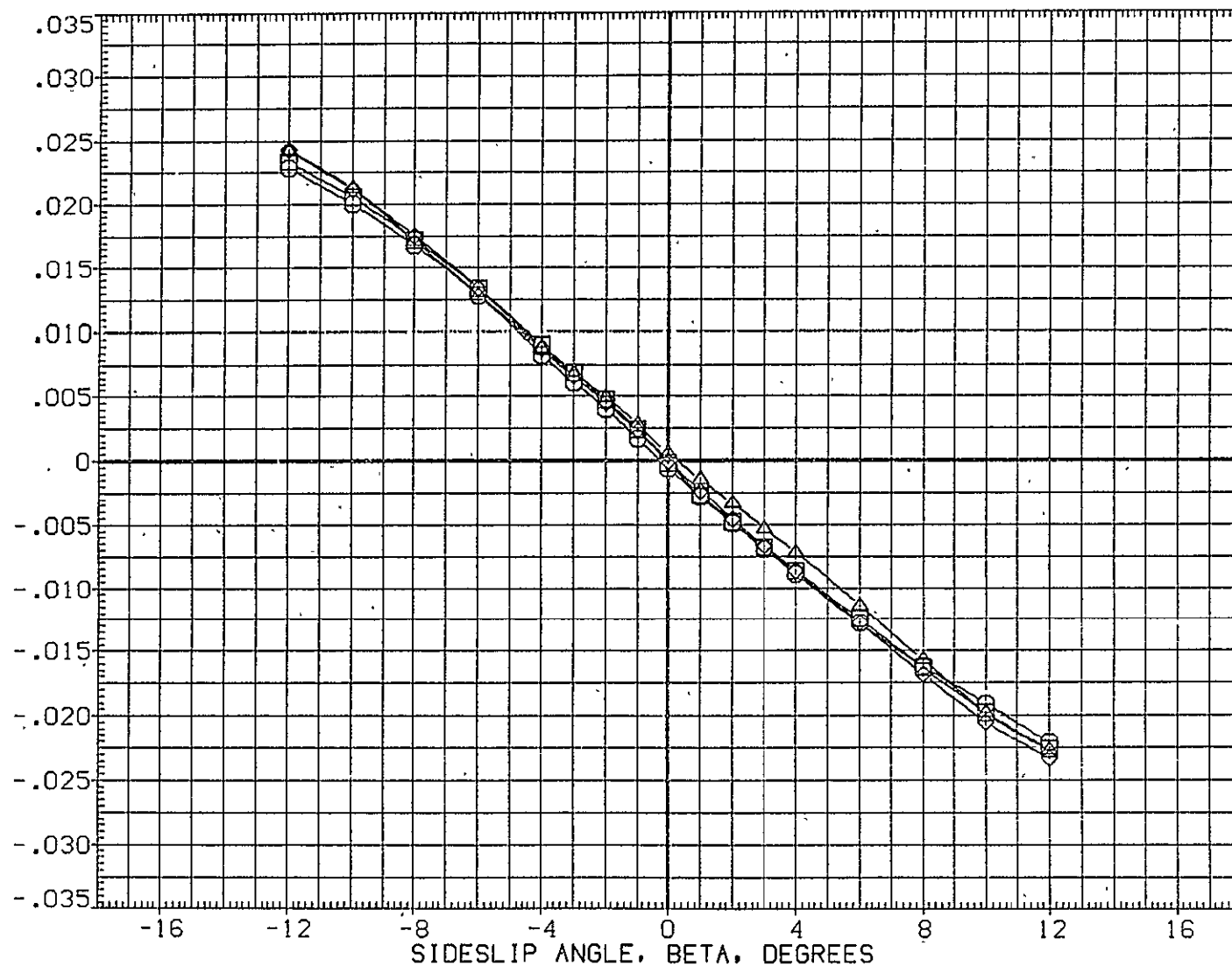


FIG.190 747+0RB(4 DEG)+TIP FINS,FLAPS UP FERRY,ALPHA1=8(S=-3.2)

747

SYMBOL	MACH	PARAMETRIC VALUES			
○	.300	ALPHA1	8.000	STAB	-3.200
□	.500	RUD-U	.000	RUD-L	.000
◇	.600	ELV-1B	.000	ELV-0B	3.000
△	.700	S1-2	.000	S3-4	.000
		S5-6	.000	10RB	4.000

REFERENCE INFORMATION		
SREF	2690.0000	SO. FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN. X0
YMRP	.0000	IN. Y0
ZMRP	375.0000	IN. Z0
SCALE	.0300	

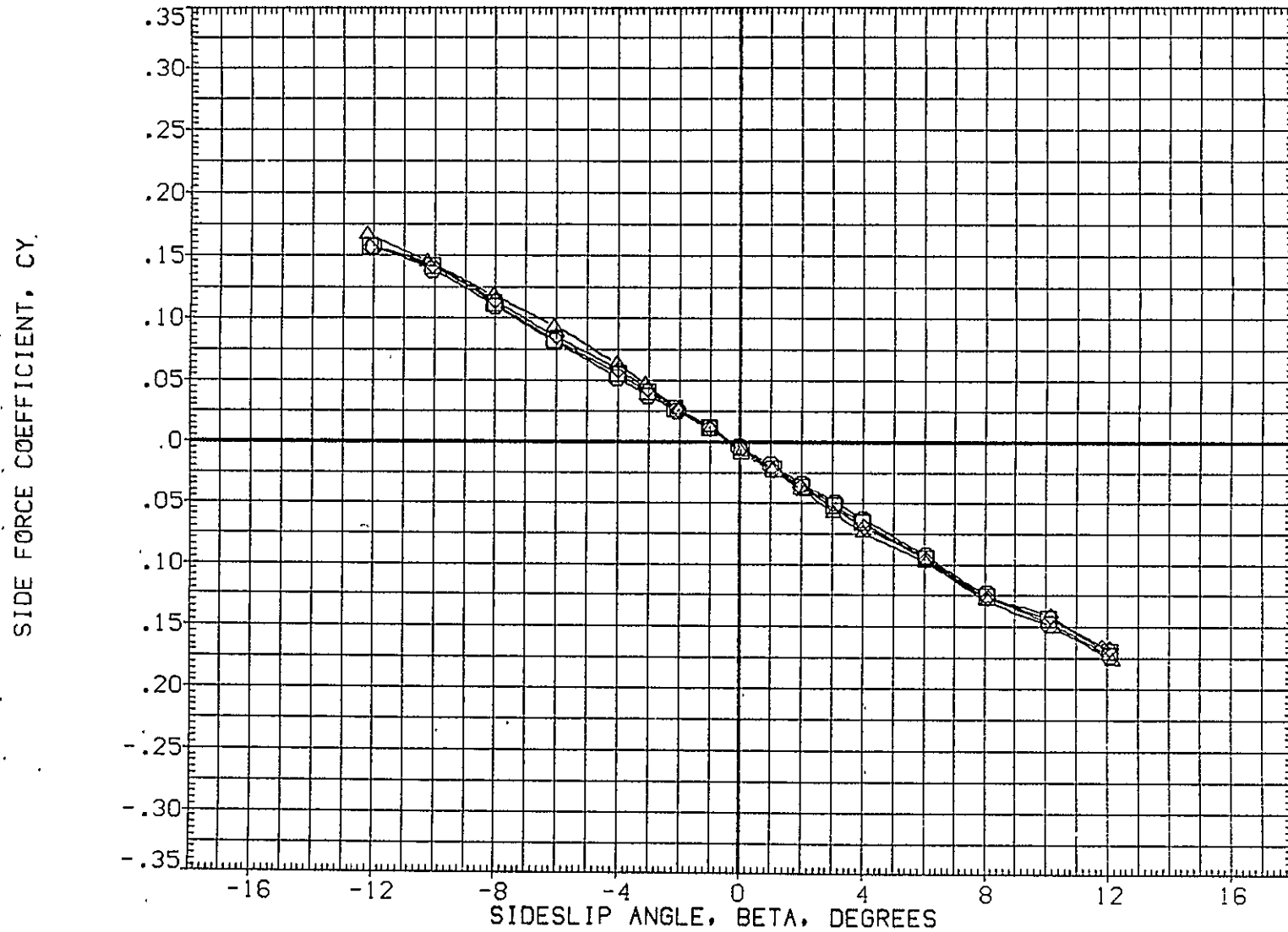


FIG.191 747+0RB(4 DEG)+TIP FINS,FLAPS UP FERRY,ALPHA1=8(S=-3.2)

0RB

CA5 0RB TC5 AT38.3 (PRES. K1 F0 H15.6 V9.1)(XGM115)

SYMBOL	MACH	PARAMETRIC VALUES
○	.300	ALPHA1 8.000 STAB -3.200
□	.500	RUD-U .000 RUD-L .000
◇	.600	ELV-1B .000 ELV-0B 3.000
△	.700	S1-2 .000 S3-4 .000
		S5-6 .000 10RB 4.000

REFERENCE INFORMATION	
SREF	2690.0000 SQ.FT.
LREF	474.8100 IN.
BREF	936.6800 IN.
XMRP	1109.0000 IN. X0
YMRP	.0000 IN. Y0
ZMRP	375.0000 IN. Z0
SCALE	.0300

YAWING MOMENT COEFFICIENT, CLN. (STABILITY AXIS)

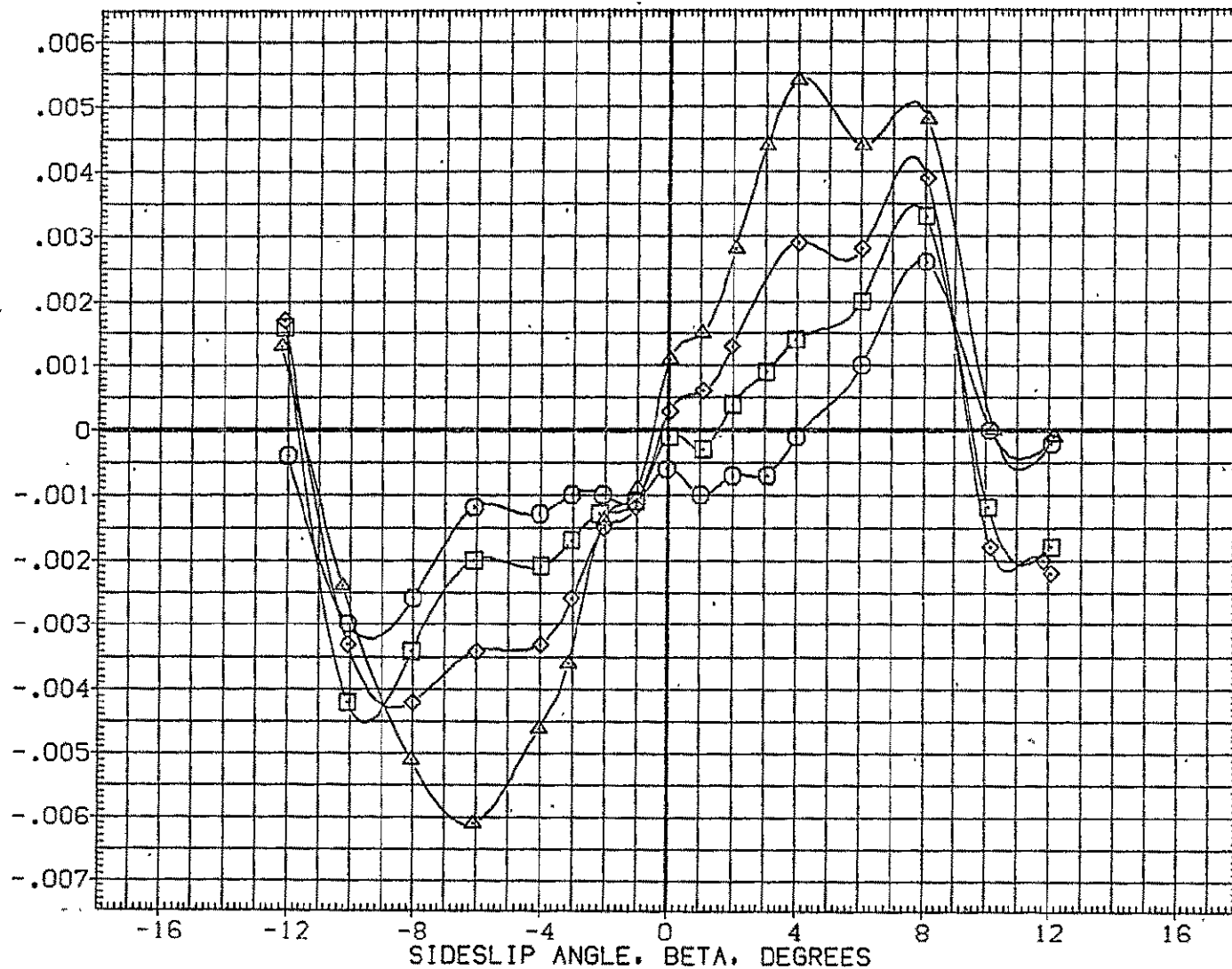


FIG.191 747+0RB(4 DEG)+TIP FINS,FLAPS UP FERRY,ALPHA1=8(S=-3.2)

0RB

SYMBOL	MACH	PARAMETRIC VALUES
○	.300	ALPHA1 8.000 STAB -3.200
□	.500	RUD-U .000 RUD-L .000
◇	.600	ELV-1B .000 ELV-OB 3.000
△	.700	S1-2 .000 S3-4 .000
		S5-6 .000 TORB 4.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRF	1109.0000	IN. X0
YMRF	.0000	IN. Y0
ZMRF	375.0000	IN. Z0
SCALE	.0300	

ROLLING MOMENT COEFFICIENT, CSL, (STABILITY AXIS)

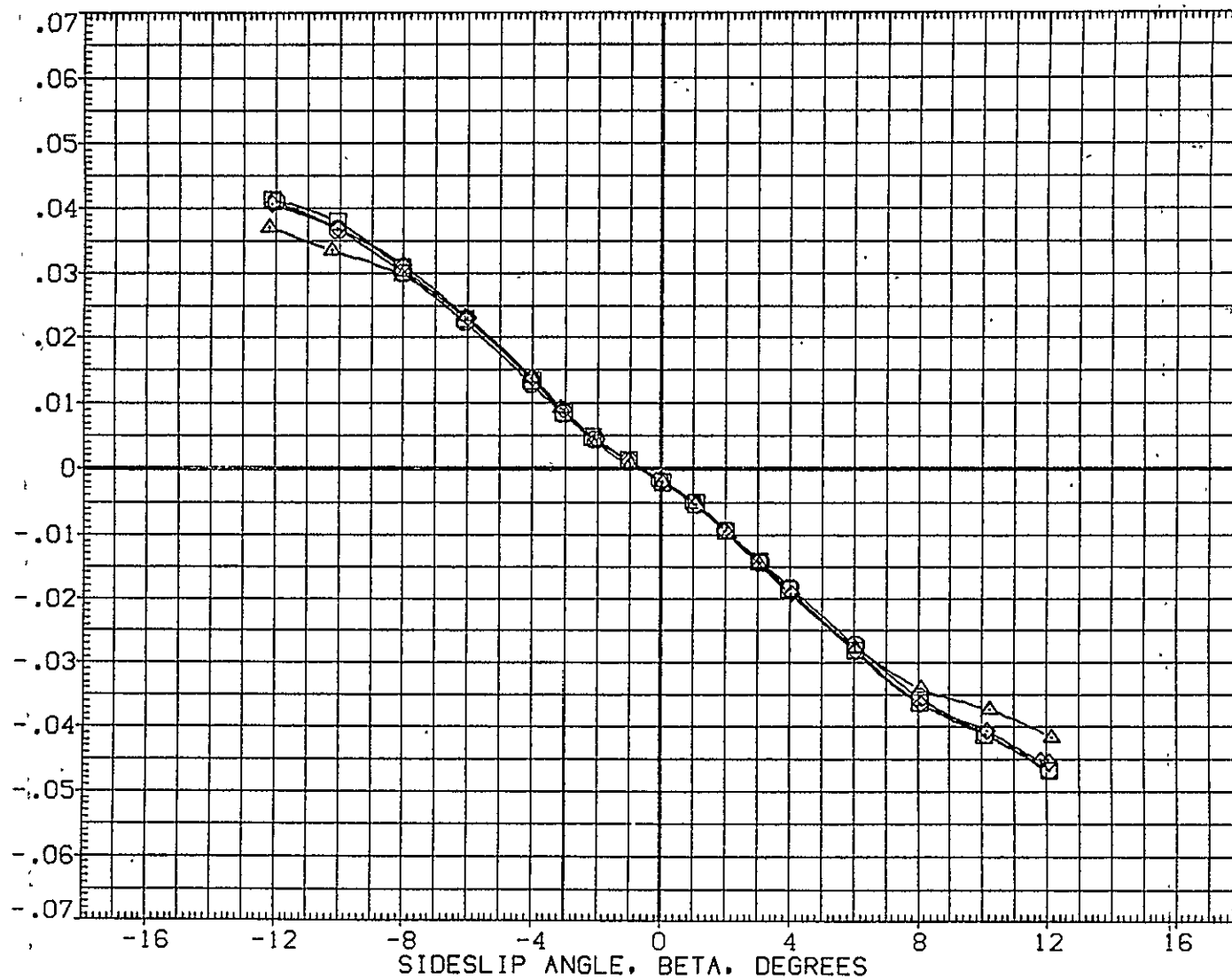


FIG.191 747+ORB(4 DEG)+TIP FINS,FLAPS UP FERRY,ALPHA1=8(S=-3.2)

ORB

CA5 K1 F0 H15.6 V9.1 (PLUS. ORB TC5 AT38.3)(RGM118)

SYMBOL	MACH	PARAMETRIC VALUES				REFERENCE INFORMATION		
○	.150	ALPHA1	6.000	STAB	-2.000	SREF	5500.0000	SQ.FT.
□	.300	RUD-U	.000	RUD-L	.000	LREF	327.8000	IN.
◇	.500	ELV-1B	.000	ELV-0B	3.000	BREF	2348.0000	IN.
△	.600	S1-2	.000	S3-4	.000	XMRP	1339.9100	IN. XC
▽	.700	S5-6	.000	IORB	4.000	YMRP	.0000	IN. YC
						ZMRP	190.7500	IN. ZC
						SCALE	.0300	

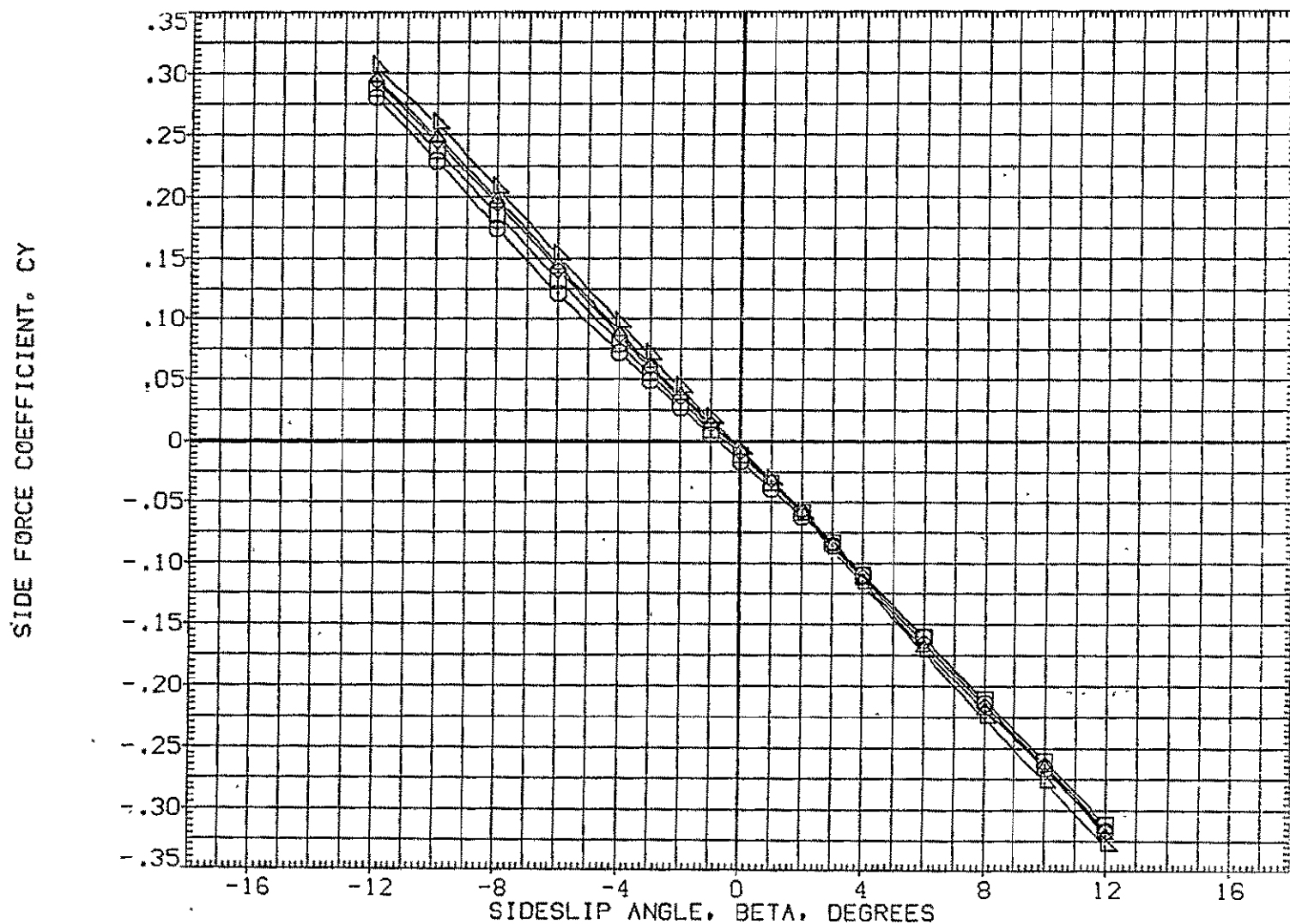


FIG.192 747+ORB(4 DEG)+TIP FINS,FLAPS UP FERRY,ALPHA1=6(S=-2)

TOTAL

SYMBOL	MACH	PARAMETRIC VALUES
○	.150	ALPHA1 6.000 STAB -2.000
◇	.300	RUD-U .000 RUD-L .000
△	.500	ELV-1B .000 ELV-OB 3.000
▽	.600	S1-2 .000 S3-4 .000
□	.700	S5-6 .000 10RB 4.000

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

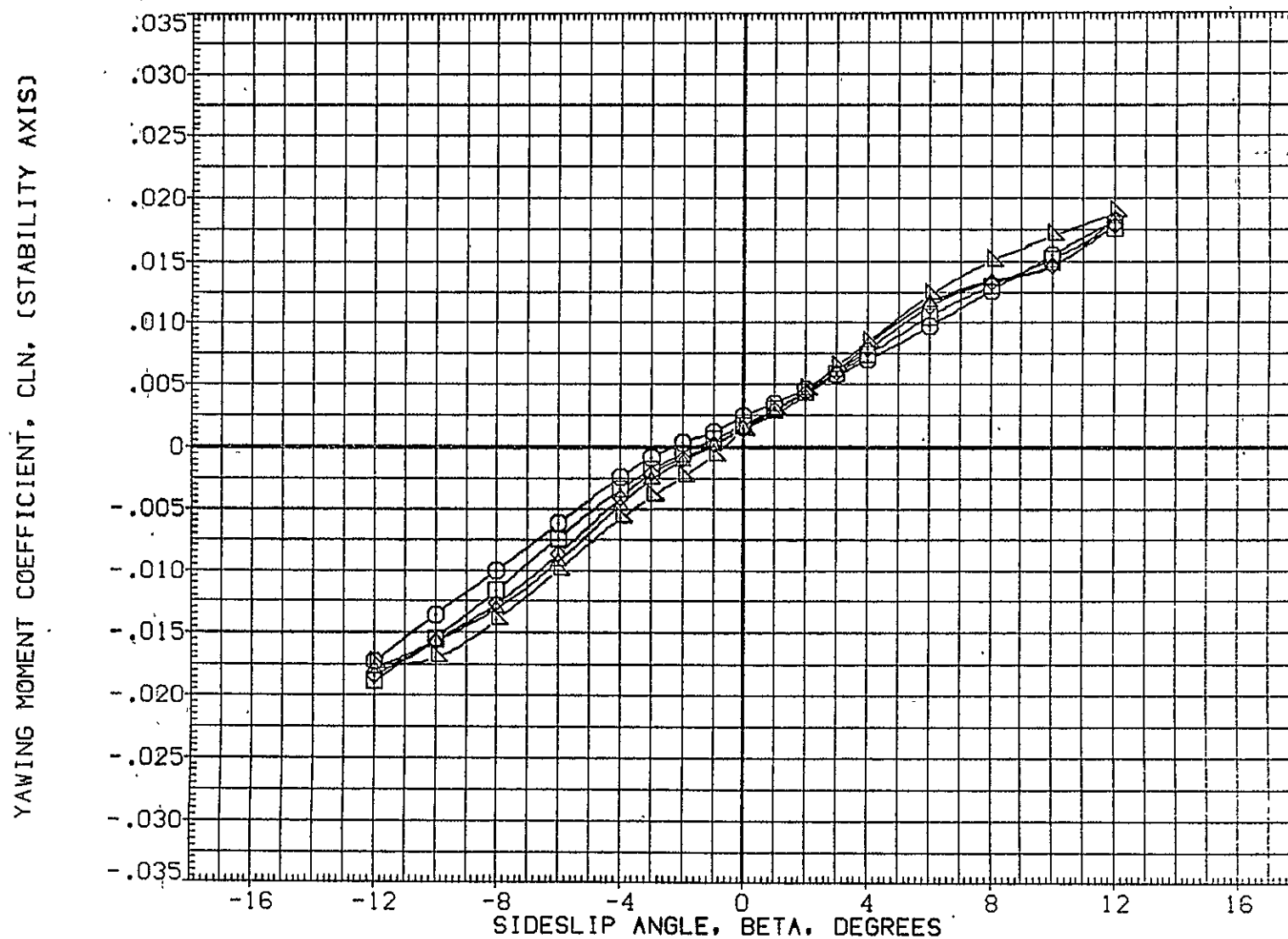


FIG.192 747+ORB(4 DEG)+TIP FINS,FLAPS UP FERRY,ALPHA1=6(S=-2)

TOTAL

CA5 K1 FO H15.6 V9.1 (PLUS. 0RB TC5 AT38.3)(RGM118)

SYMBOL	MACH	PARAMETRIC VALUES				REFERENCE INFORMATION	
○	.150	ALPHA I	6.000	STAB	-2.000	SREF	5500.0000 SQ.FT.
□	.300	RUD-U	.000	RUD-L	.000	LREF	327.8000 IN.
◇	.500	ELV-1B	.000	ELV-0B	3.000	BREF	2348.0000 IN.
△	.600	S1-2	.000	S3-4	.000	XMRP	1339.9100 IN. XC
▽	.700	S5-6	.000	10RB	4.000	YMRP	.0000 IN. YC
						ZMRP	190.7500 IN. ZC
						SCALE	.0300

ROLLING MOMENT COEFFICIENT, CSL, (STABILITY AXIS)

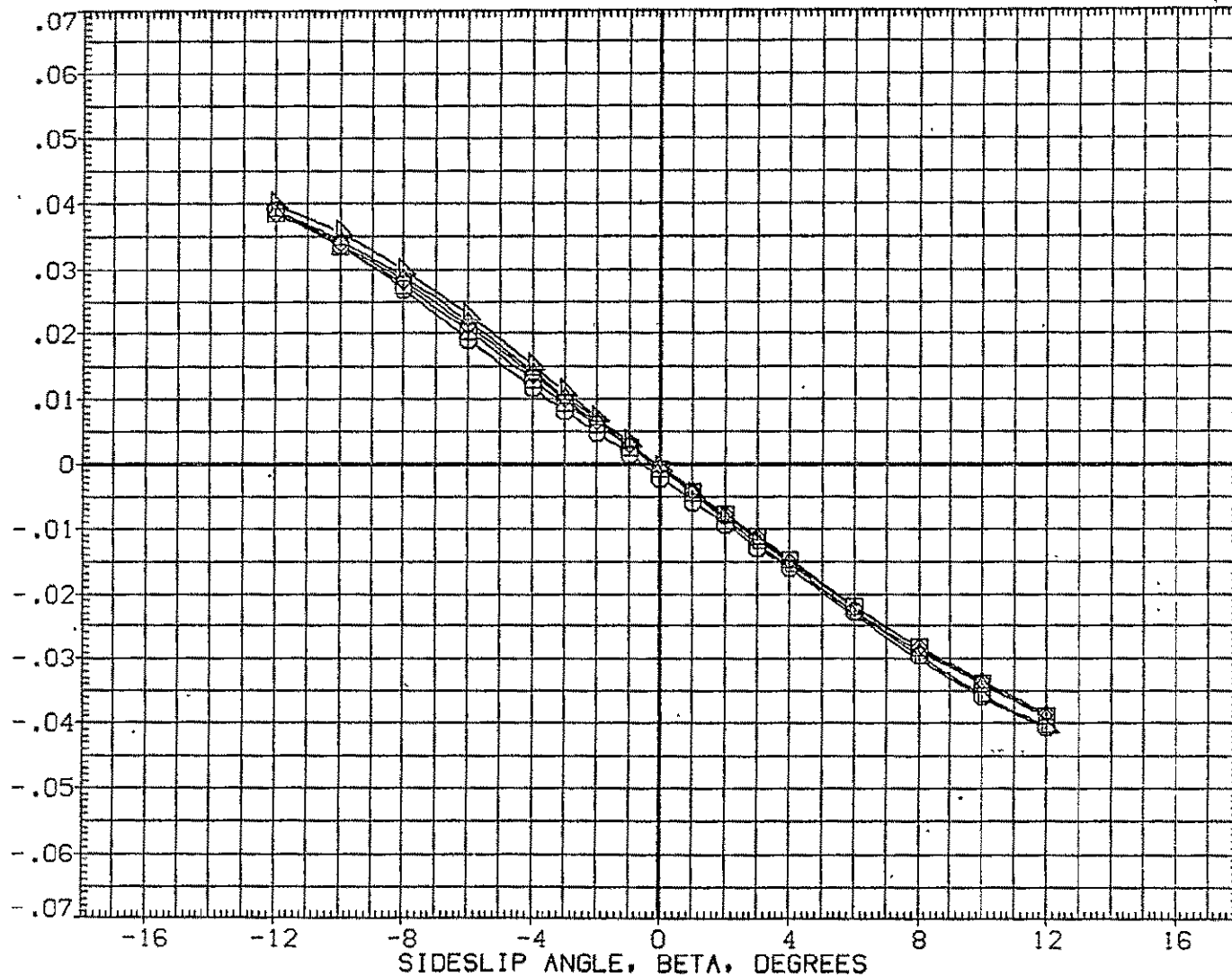


FIG.192 747+0RB(4 DEG)+TIP FINS,FLAPS UP FERRY,ALPHA I=6(S=-2)

TOTAL

SYMBOL	MACH	PARAMETRIC VALUES				REFERENCE INFORMATION		
○	.150	ALPHA1	6.000	STAB	-2.000	SREF	5500.0000	SQ.FT.
□	.300	RUD-U	.000	RUD-L	.000	LREF	327.8000	IN.
◇	.500	ELV-1B	.000	ELV-OB	3.000	BREF	2348.0000	IN.
△	.600	S1-2	.000	S3-4	.000	XMRP	1339.9100	IN. XC
▽	.700	S5-6	.000	ICRB	4.000	YMRP	.0000	IN. YC
						ZMRP	190.7500	IN. ZC
						SCALE	.0300	

INCREMENTAL SIDE FORCE COEFFICIENT(STABILITY AXIS), DCY

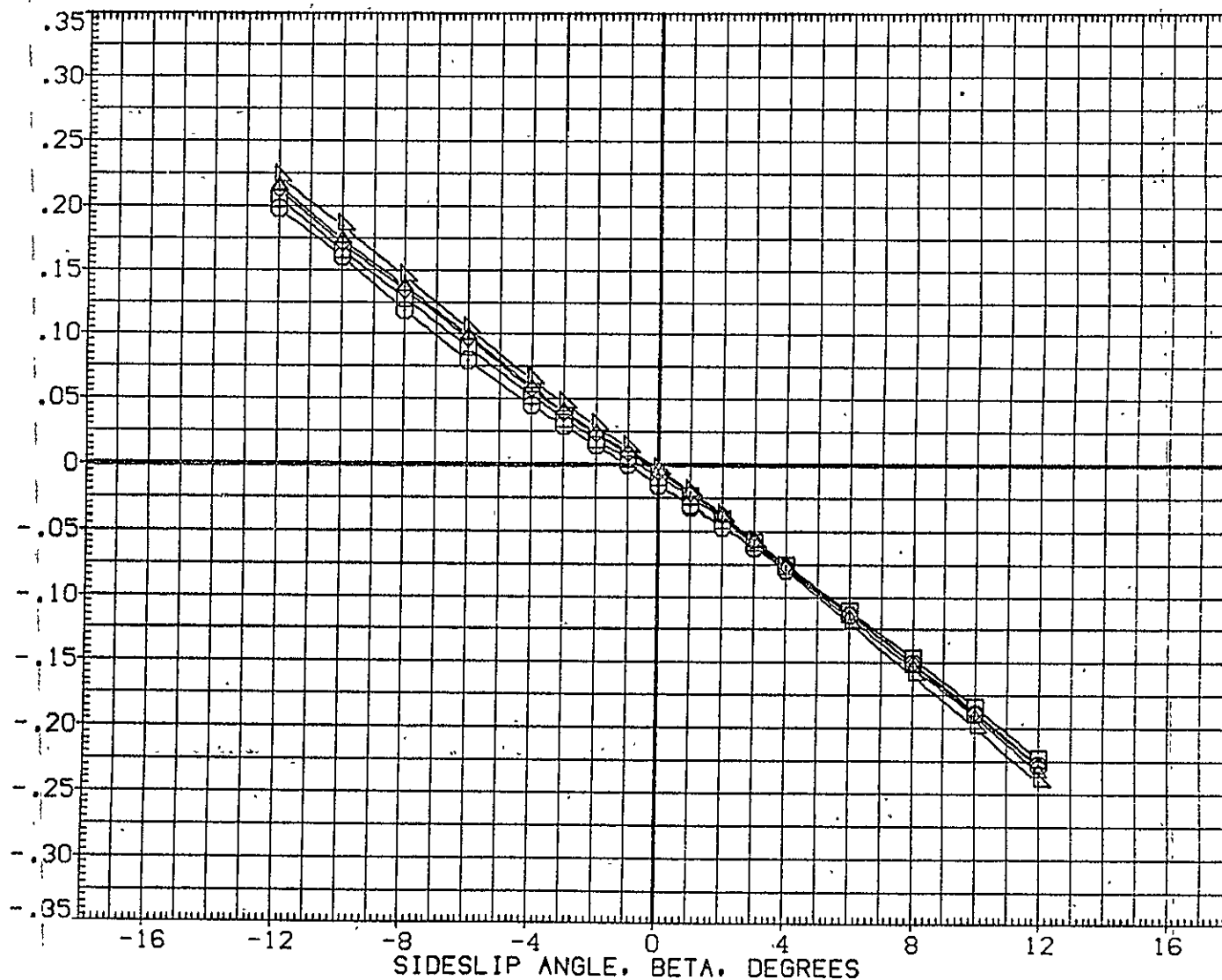


FIG.193 747+ORB(4 DEG)+TIP FINS,FLAPS UP FERRY,ALPHA1=6(S=-2)

747

CA5 K1 F0 H15.6 V9.1 MINUS 0RB TC5 AT38.3 (BGM118)

SYMBOL	MACH	PARAMETRIC VALUES
○	.150	ALPHA1 6.000 STAB -2.000
□	.300	RUD-U .000 RUD-L .000
◇	.500	ELV-1B .000 ELV-0B 3.000
△	.600	S1-2 .000 S3-4 .000
▽	.700	S5-6 .000 10RB 4.000

REFERENCE INFORMATION	
SREF	5500.0000 SQ.FT.
LREF	327.8000 IN.
BREF	2348.0000 IN.
XMRP	1339.9100 IN. XC
YMRP	.0000 IN. YC
ZMRP	190.7500 IN. ZC
SCALE	.0300

INCREMENTAL YAWING MOMENT COEFFICIENT (STABILITY AXIS), DCLN

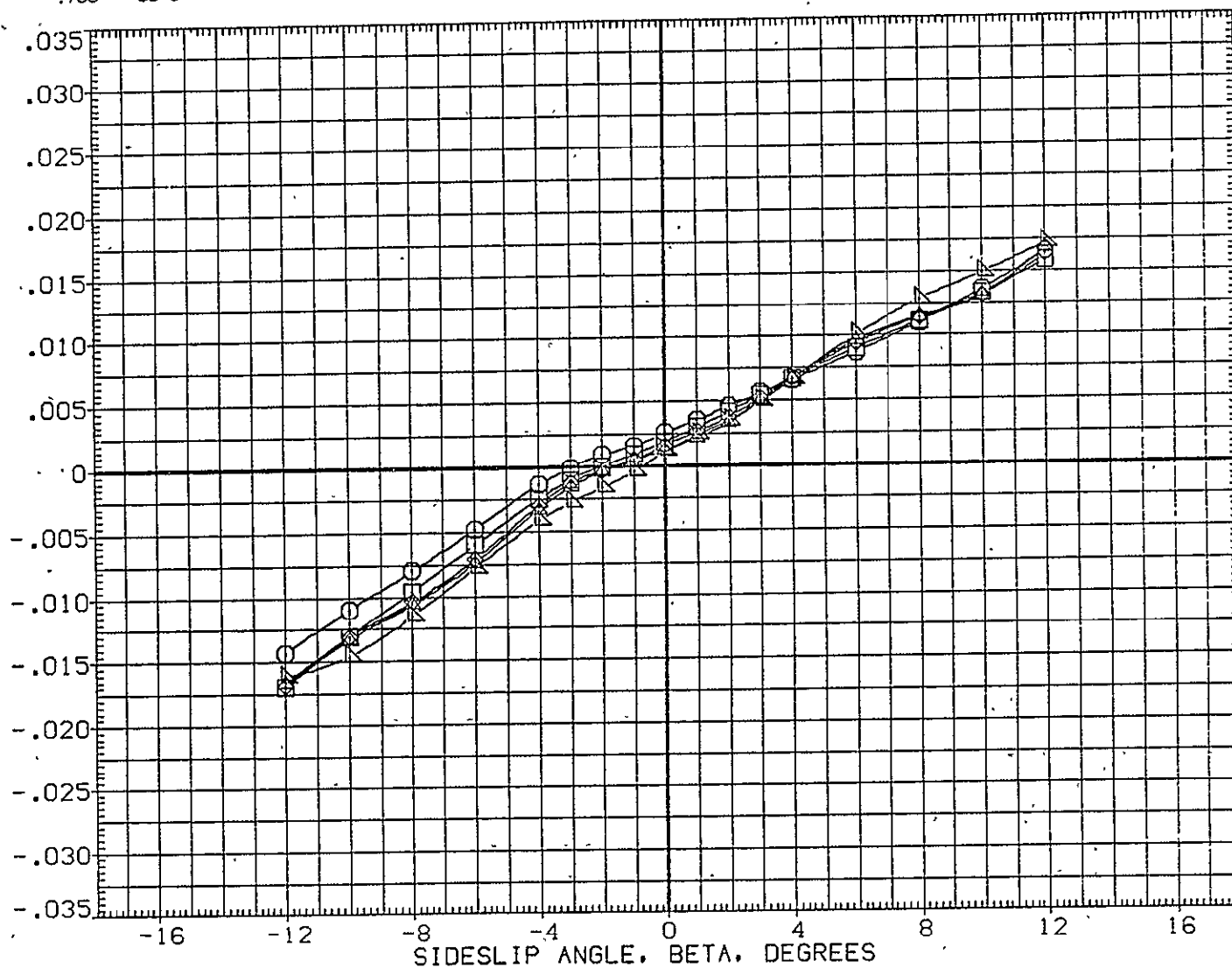


FIG.193 747+0RB(4 DEG)+TIP FINS,FLAPS UP FERRY,ALPHA1=6(S=-2)

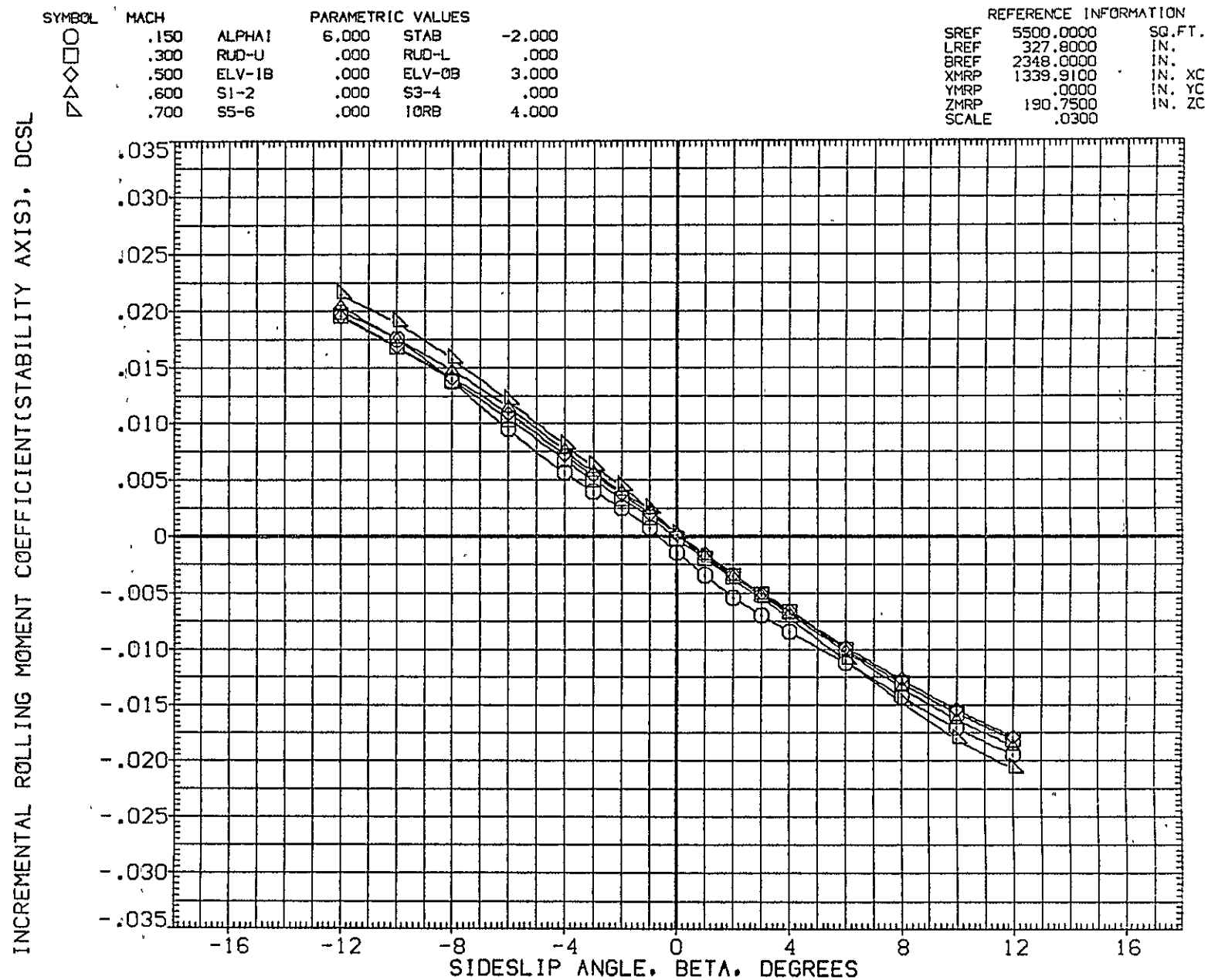


FIG.193 747+0RB(4 DEG)+TIP FINS, FLAPS UP FERRY, ALPHA I=6(S=-2)

747

CA5 0RB TC5 AT38.3 (PRES. K1 FO H15.6 V9.1)(XGM118)

SYMBOL	MACH	PARAMETRIC VALUES			
○	.149	ALPHA I	6.000	STAB	-2.000
□	.300	RUD-U	.000	RUD-L	.000
◇	.500	ELV-1B	.000	ELV-0B	3.000
△	.600	S1-2	.000	S3-4	.000
▽	.700	S5-6	.000	IORB	4.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN. X0
YMRP	.0000	IN. Y0
ZMRP	375.0000	IN. Z0
SCALE	.0300	

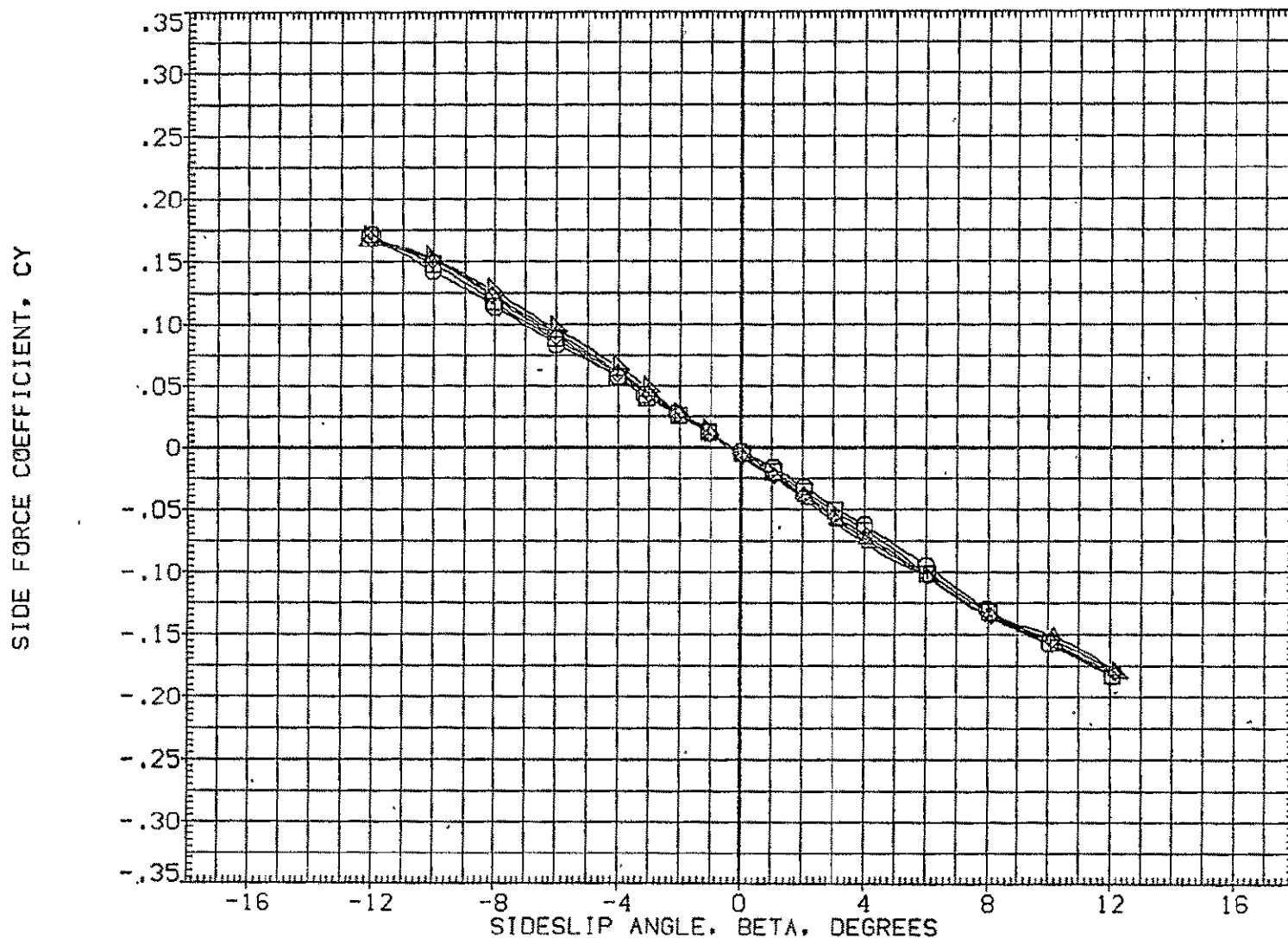


FIG.194 747+0RB(4 DEG)+TIP FINS,FLAPS UP FERRY,ALPHA I=6(S=-2)

0RB

SYMBOL	MACH	PARAMETRIC VALUES
○	.149	ALPHA1 6.000 STAB -2.000
□	.300	RUD-U .000 RUD-L .000
◇	.500	ELV-1B .000 ELV-OB 3.000
△	.600	S1-2 .000 S3-4 .000
▽	.700	S5-6 .000 IORB 4.000

REFERENCE INFORMATION		
SREF	2690.0000	SO.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN. X0
YMRP	.0000	IN. Y0
ZMRP	375.0000	IN. Z0
SCALE	.0300	

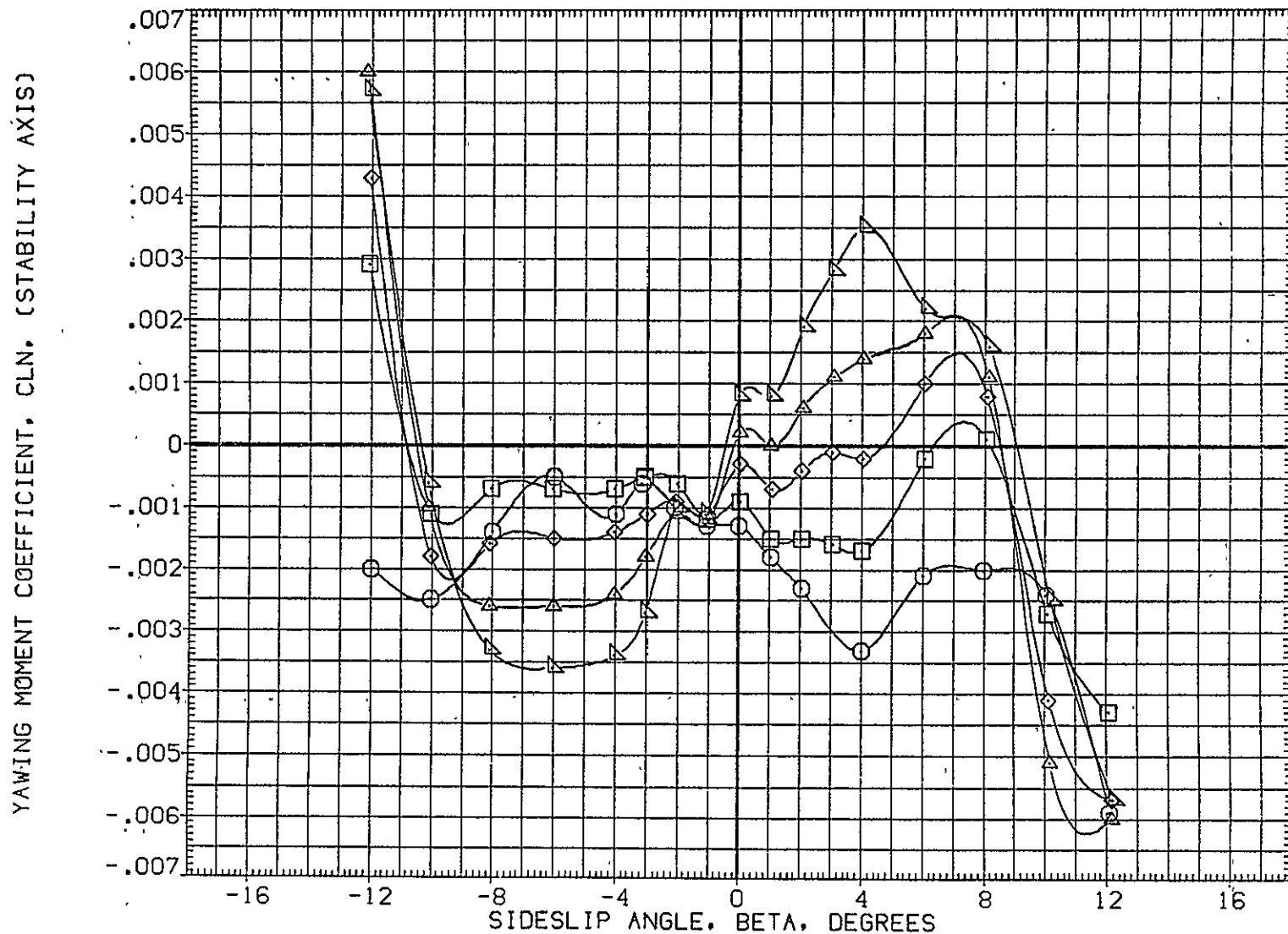


FIG.194 747+ORB(4 DEG)+TIP FINS,FLAPS UP FERRY,ALPHA1=6(S=-2)

ORB

6.9

CA5 0RB TC5 AT38.3 (PRES. K1 F0 H15.6 V9.1)(XGM118)

SYMBOL	MACH	PARAMETRIC VALUES
○	.149	ALPHA1 6.000 STAB -2.000
□	.300	RUD-U .000 RUD-L .000
◇	.500	ELV-1B .000 ELV-0B -3.000
△	.600	S1-2 .000 S3-4 .000
▽	.700	S5-6 .000 10RB 4.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN. XG
YMRP	.0000	IN. YG
ZMRP	375.0000	IN. ZG
SCALE	.0300	

ROLLING MOMENT COEFFICIENT, CSL, (STABILITY AXIS)

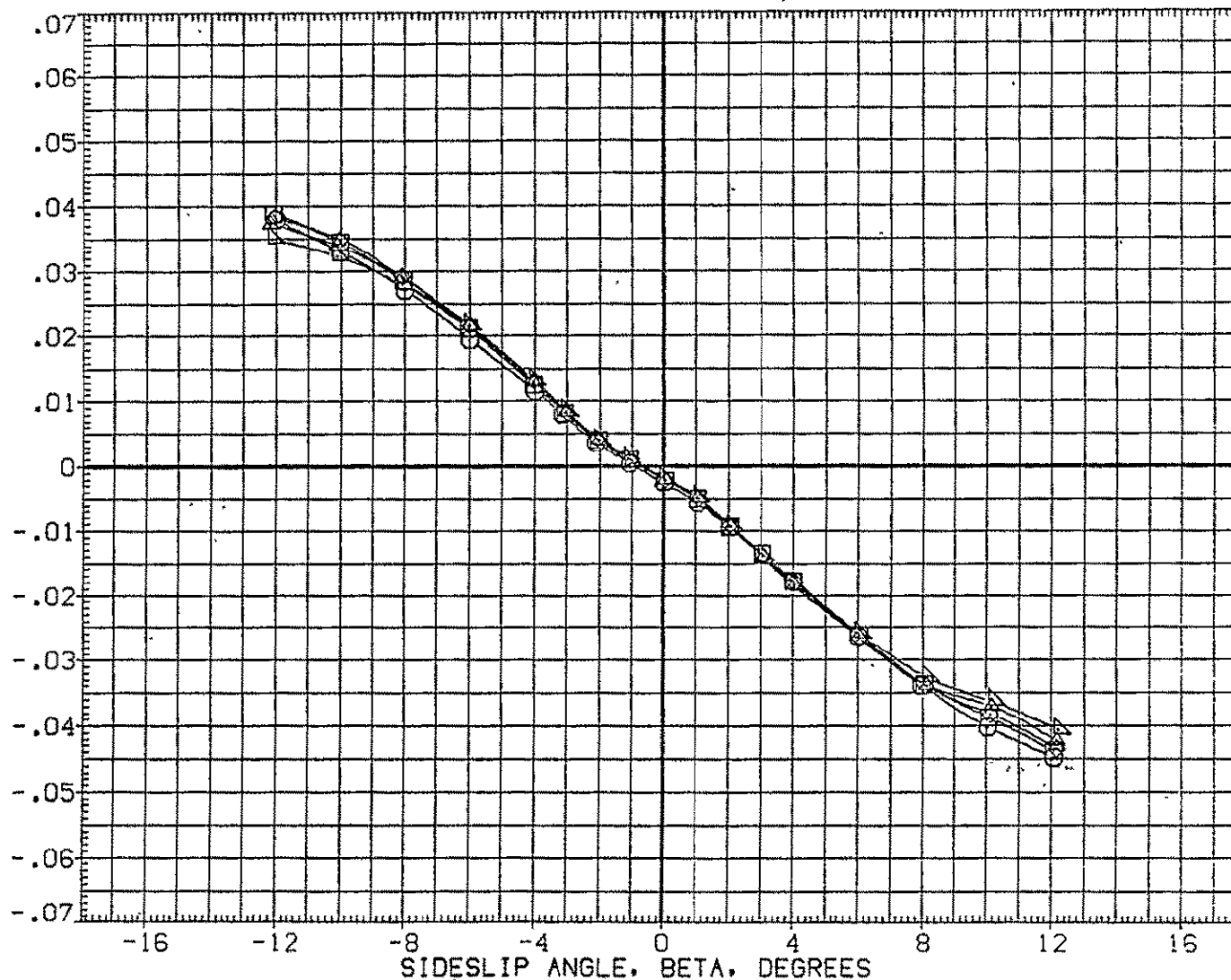


FIG.194 747+0RB(4 DEG)+TIP FINS,FLAPS UP FERRY,ALPHA1=6(S=-2)

0RB

CA5 K1 F0 H15.6 V9.1 (PLUS. ORB TC5 AT38.3)(RGM121)

SYMBOL	MACH	PARAMETRIC VALUES	REFERENCE INFORMATION
○	.300	ALPHA1 6.000 STAB -2.000	SREF 5500.0000 SQ.FT.
□	.499	RUD-U 10.000 RUD-L 10.000	LREF 327.8000 IN.
◇	.600	ELV-1B .000 ELV-OB 3.000	BREF 2348.0000 IN.
△	.700	S1-2 .000 S3-4 .000	XMRP 1339.9100 IN. XC
		S5-6 .000 IORB 4.000	YMRP .0000 IN. YC
			ZMRP 190.7500 IN. ZC
			SCALE .0300

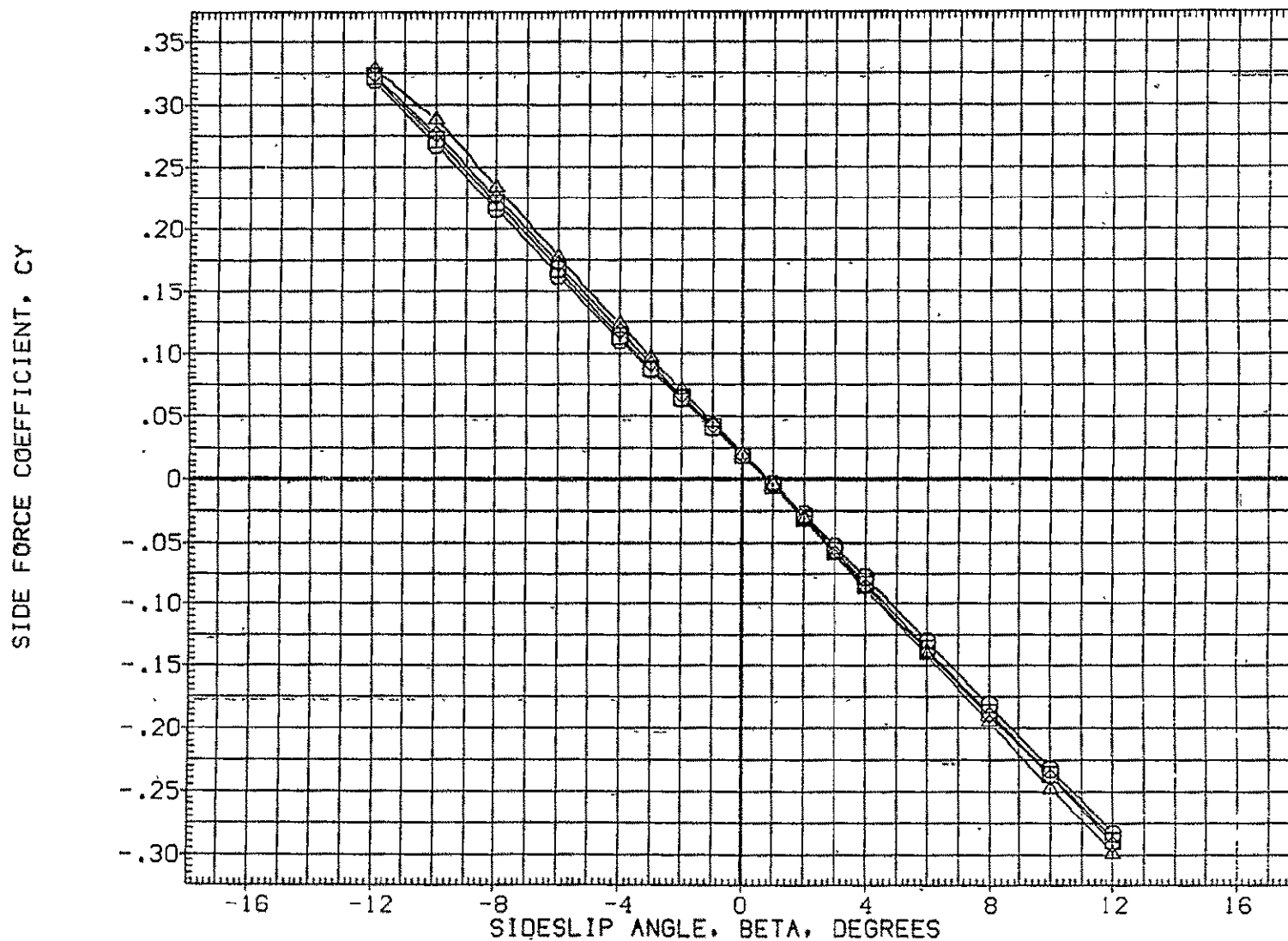


FIG.195 747+ORB(4 DEG)+TIP FINS,FLAPS UP,ALPHA1=6,RUDDER=10/10

TOTAL

CA5 K1 FO H15.6 V9.1 (PLUS. 0RB TC5 AT38.3)(RGM121)

SYMBOL	MACH	PARAMETRIC VALUES
○	.300	ALPHA1 6.000 STAB -2.000
□	.499	RUD-U 10.000 RUD-L 10.000
◇	.600	ELV-1B .000 ELV-0B 3.000
△	.700	S1-2 .000 S3-4 .000
		S5-6 .000 10RB 4.000

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

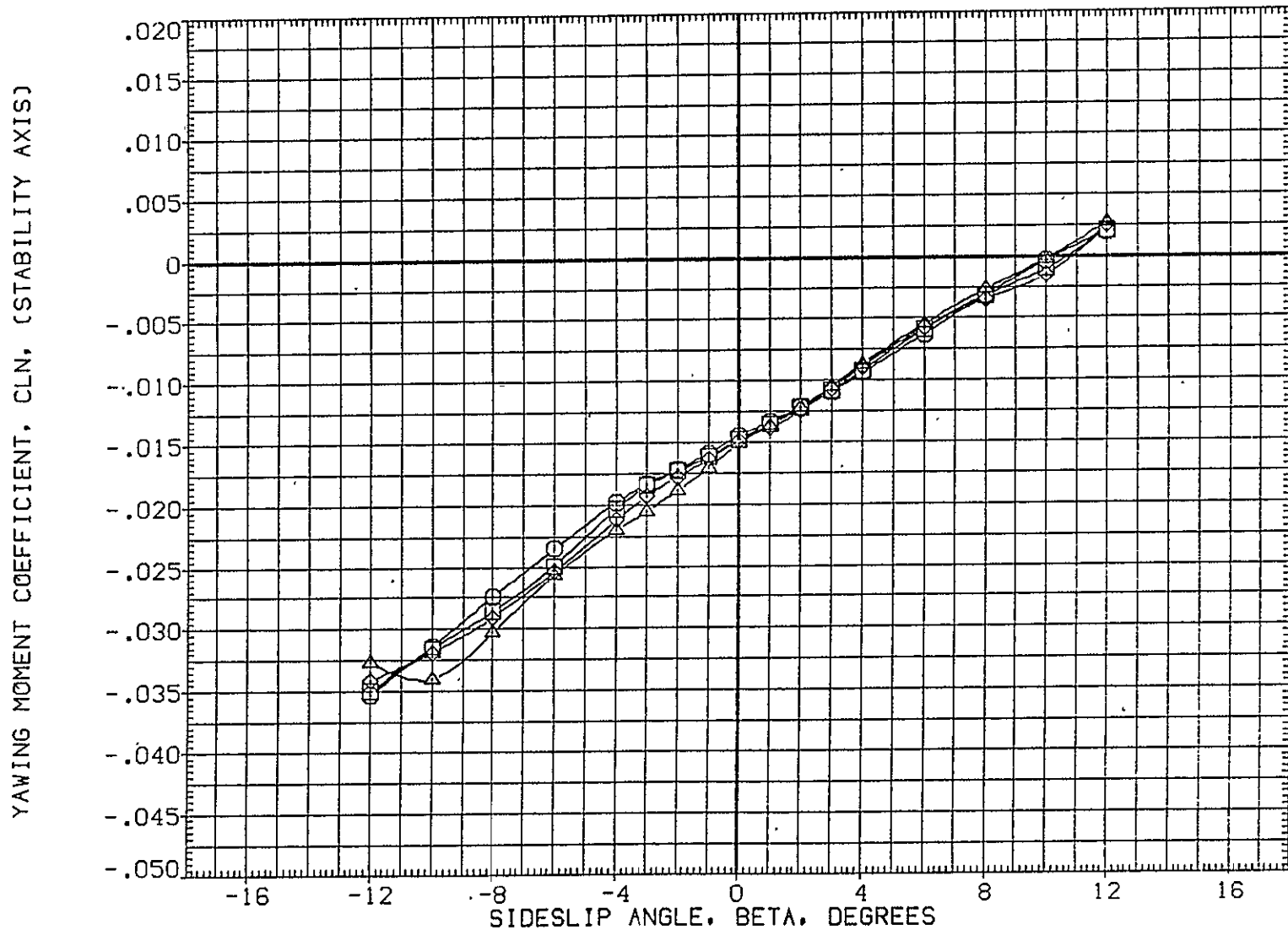


FIG.195 747+0RB(4 DEG)+TIP FINS,FLAPS UP,ALPHA1=6,RUDDER=10/10

TOTAL

SYMBOL	MACH	PARAMETRIC VALUES
○	.300	ALPHA-I 6.000 STAB -2.000
□	.499	RUD-U 10.000 RUD-L 10.000
◇	.600	ELV-1B .000 ELV-0B 3.000
△	.700	S1-2 .000 S3-4 .000
		S5-6 .000 10RB 4.000

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

ROLLING MOMENT COEFFICIENT, CSL, (STABILITY AXIS)

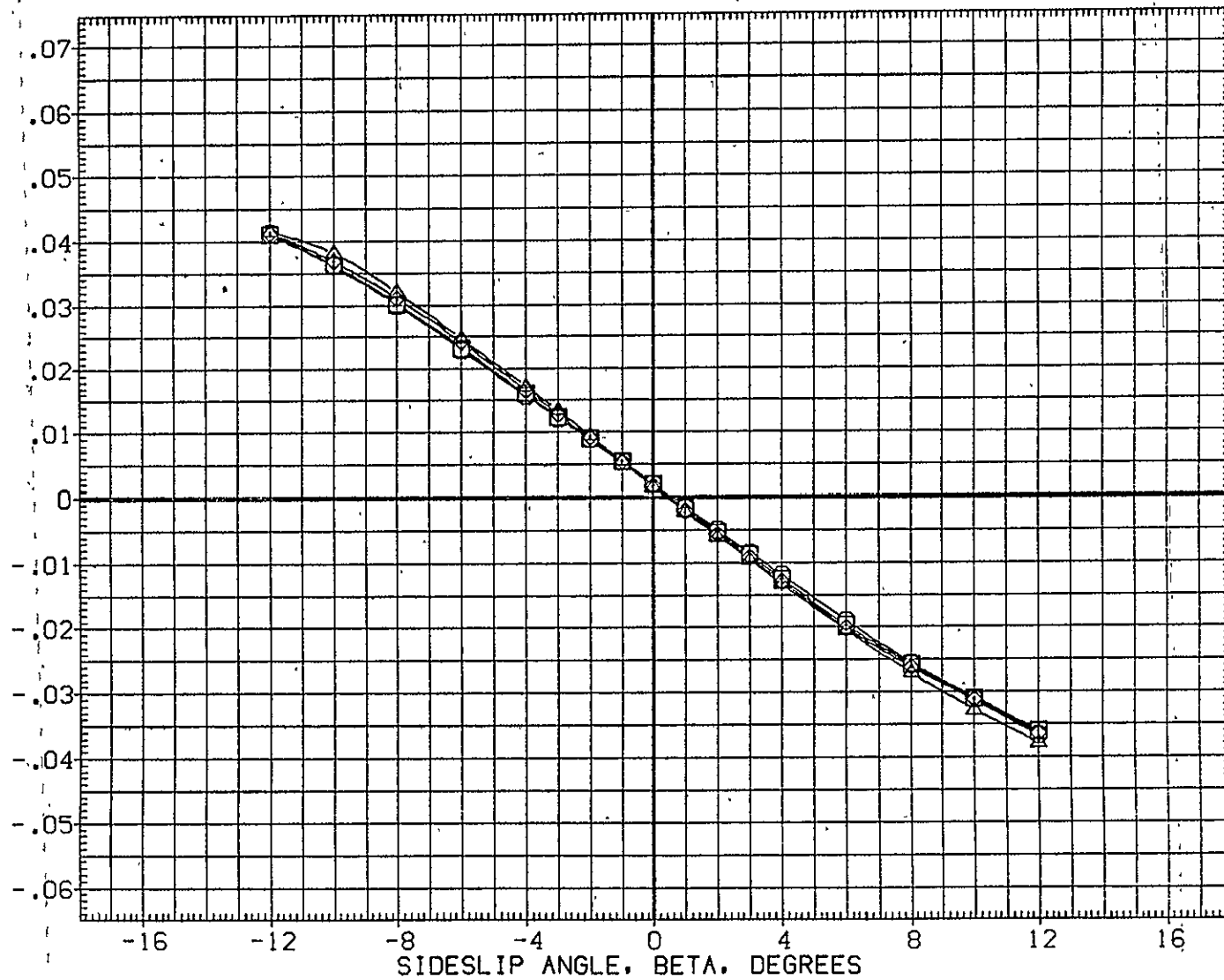


FIG.195 747+0RB(4 DEG)+TIP FINS, FLAPS UP, ALPHA I=6, RUDDER=10/10

TOTAL

CA5 K1 FO H15.6 V9.1 MINUS ORB TC5 AT38.3 (BGM121)

SYMBOL	MACH	PARAMETRIC VALUES	REFERENCE INFORMATION
○	.300	ALPHA I 6.000 STAB -2.000	SREF 5500.0000 SQ.FT.
□	.499	RUD-U 10.000 RUD-L 10.000	LREF 327.8000 IN.
◇	.600	ELV-IB .000 ELV-OB 3.000	BREF 2348.0000 IN.
△	.700	S1-2 .000 S3-4 .000	XMRP 1339.9100 IN. XC
		S5-6 .000 IORB 4.000	YMRP .0000 IN. YC
			ZMRP 190.7500 IN. ZC
			SCALE .0300

INCREMENTAL SIDE FORCE COEFFICIENT (STABILITY AXIS), DCY

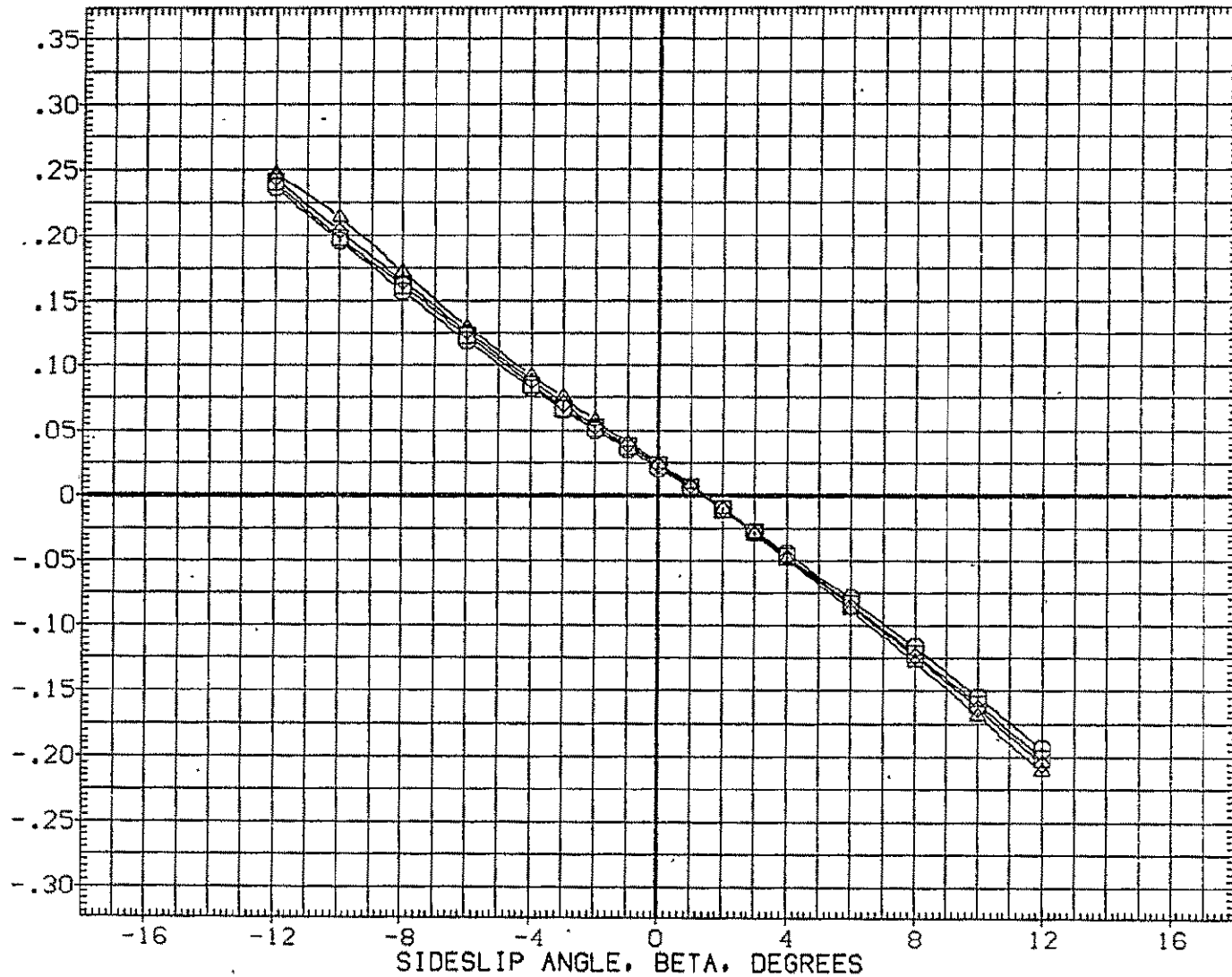


FIG.196 747+ORB(4 DEG)+TIP FINS, FLAPS UP, ALPHA I=6, RUDDER=10/10

SYMBOL	MACH	PARAMETRIC VALUES
○	.300	ALPHA1 6.000 STAB -2.000
□	.499	RUD-U 10.000 RUD-L 10.000
◇	.600	ELV-1B .000 ELV-0B 3.000
△	.700	S1-2 .000 S3-4 .000
		S5-6 .000 10RB 4.000

REFERENCE INFORMATION		
SREF	5500.0000	50.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

INCREMENTAL YAWING MOMENT COEFFICIENT (STABILITY AXIS), DCLN

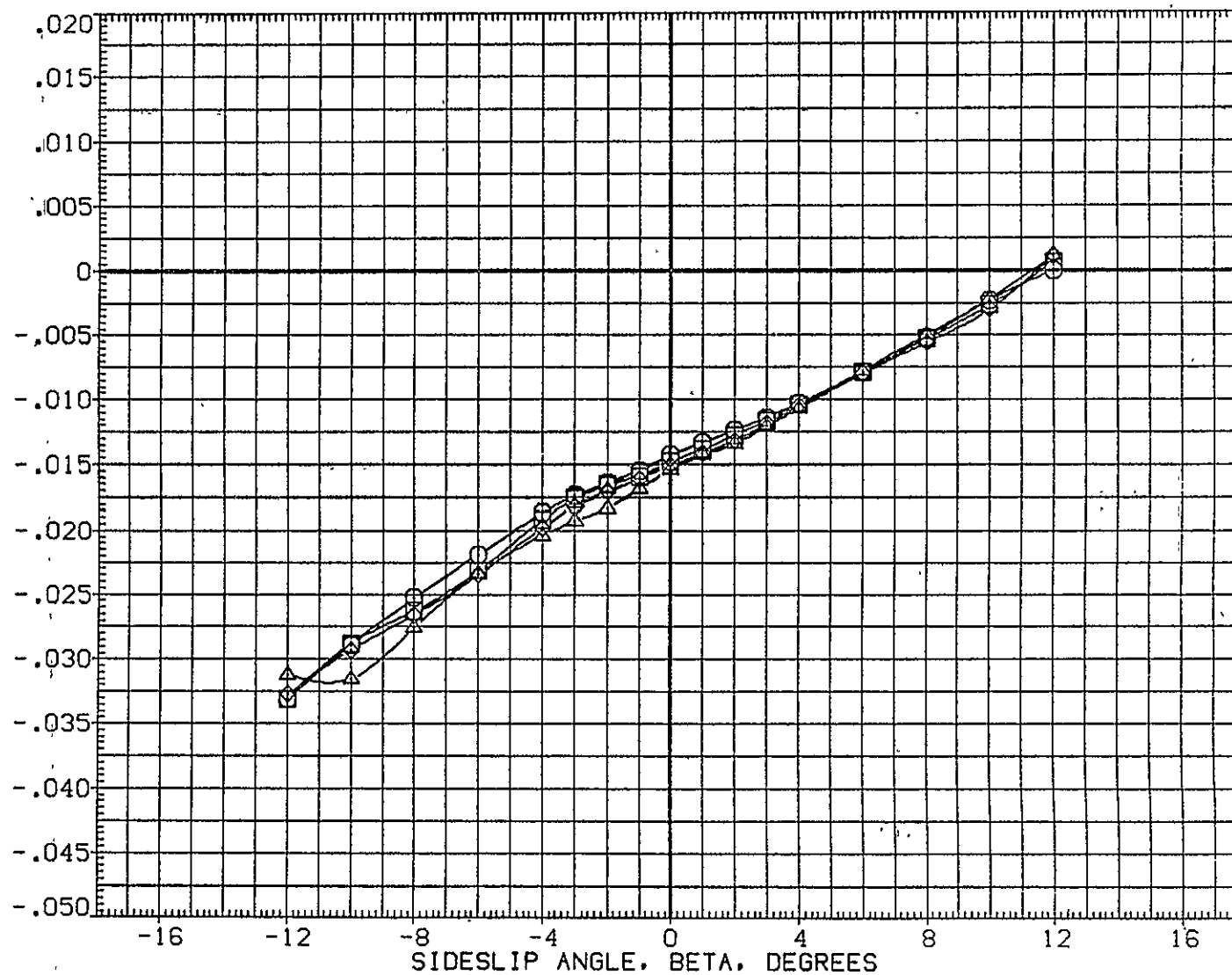


FIG. 196 747+0RB(4 DEG)+TIP FINS, FLAPS UP, ALPHA1=6, RUDDER=10/10

747

V:\TOWERS\BGM121\BGM121.DAT
 10/10/10 10:00:00
 10/10/10 10:00:00
 10/10/10 10:00:00

CA5 K1 F0 H15.6 V9.1 MINUS ORB TC5 AT38.3 (BGM121)

SYMBOL	MACH	PARAMETRIC VALUES
○	.300	ALPHA1 6.000 STAB -2.000
□	.499	RUD-U 10.000 RUD-L 10.000
◇	.600	ELV-18 .000 ELV-08 3.000
△	.700	S1-2 .000 S3-4 .000
		S5-6 .000 10RS 4.000

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

INCREMENTAL ROLLING MOMENT COEFFICIENT(STABILITY AXIS), DCSL

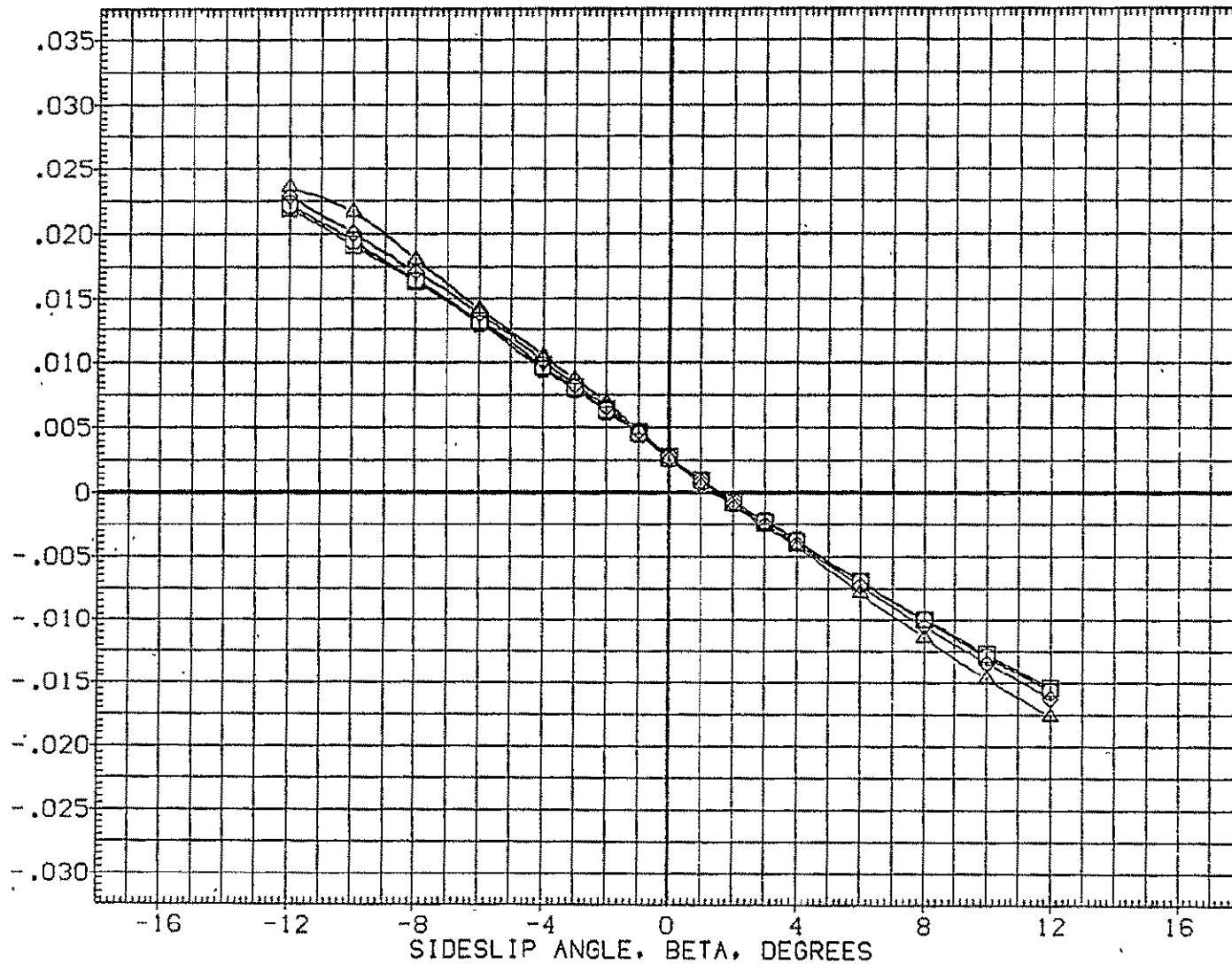


FIG.196 747+ORB(4 DEG)+TIP FINS,FLAPS UP,ALPHA1=6,RUDDER=10/10

SYMBOL	MACH	PARAMETRIC VALUES			
○	.299	ALPHA I	6.000	STAB	-2.000
□	.499	RUD-U	10.000	RUD-L	10.000
◇	.601	ELV-1B	.000	ELV-OB	3.000
△	.700	S1-2	.000	S3-4	.000
		S5-6	.000	IORB	4.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN. X0
YMRP	.0000	IN. Y0
ZMRP	375.0000	IN. Z0
SCALE	.0300	

SIDE FORCE COEFFICIENT, CY

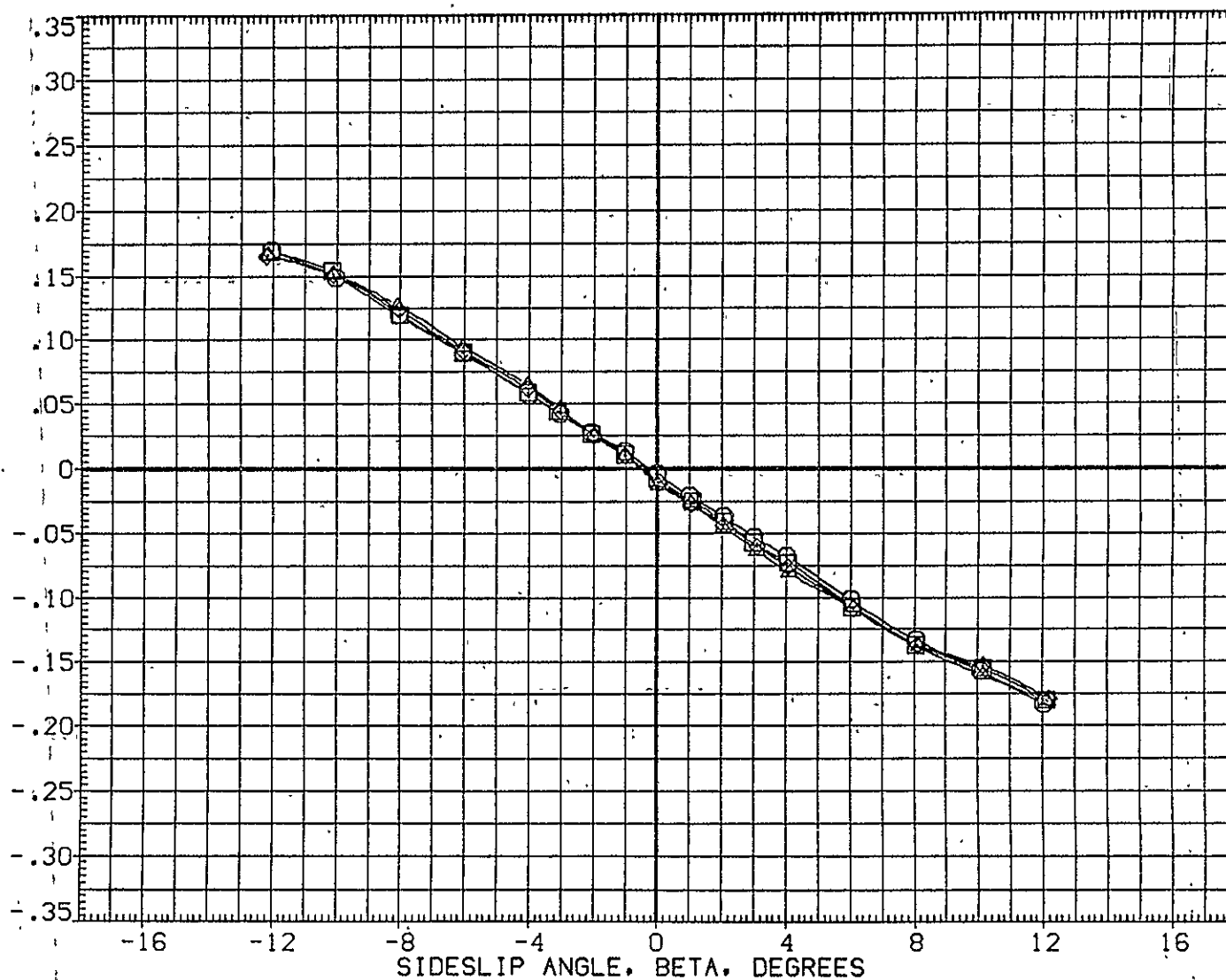


FIG.197 747+ORB(4 DEG)+TIP FINS,FLAPS UP,ALPHA I=6,RUDDER=10/10

ORB

CA5 - ORB TC5 AT38.3 (PRES. K1 FO H15.6 V9.1)(XGM121)

SYMBOL	MACH	PARAMETRIC VALUES			
○	.299	ALPHA1	6.000	STAB	-2.000
□	.499	RUD-U	10.000	RUD-L	10.000
◇	.601	ELV-1B	.000	ELV-OB	3.000
△	.700	S1-2	.000	S3-4	.000
		S5-6	.000	IORB	4.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN. X0
YMRP	.0000	IN. Y0
ZMRP	375.0000	IN. Z0
SCALE	.0300	

YAWING MOMENT COEFFICIENT, CLN, (STABILITY AXIS)

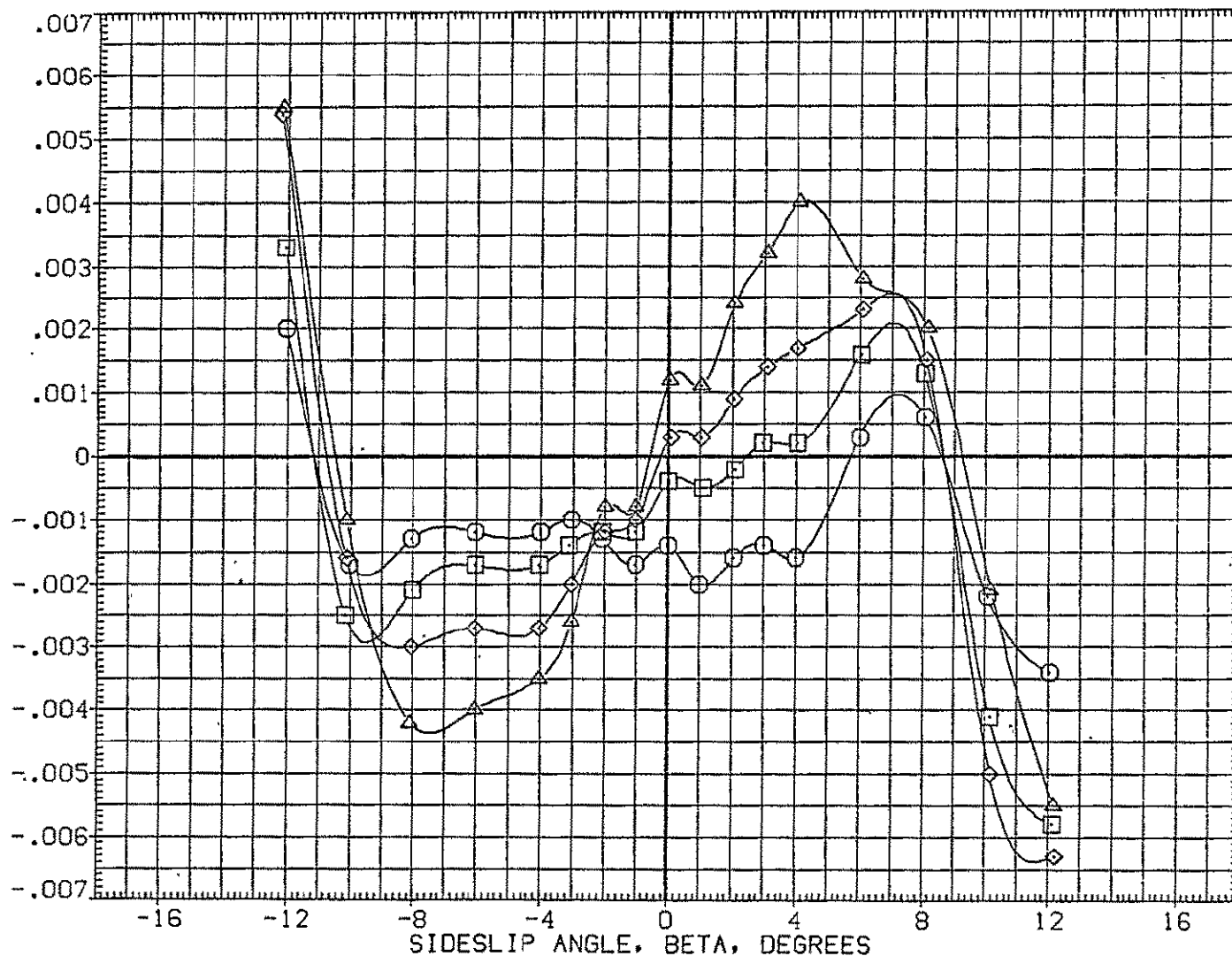


FIG.197 747+ORB(4 DEG)+TIP FINS,FLAPS UP,ALPHA1=6,RUDDER=10/10

ORB

SYMBOL	MACH	PARAMETRIC VALUES
○	.299	ALPHA1 6.000 STAB -2.000
□	.499	RUD-U 10.000 RUD-L 10.000
◇	.601	ELV-1B .000 ELV-0B 3.000
△	.700	S1-2 .000 S3-4 .000
		SS-6 .000 10RB 4.000

REFERENCE INFORMATION		
SREF	2690.0000	SO.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN. X0
YMRP	.0000	IN. Y0
ZMRP	375.0000	IN. Z0
SCALE	.0300	

ROLLING MOMENT COEFFICIENT, CSL, (STABILITY AXIS)

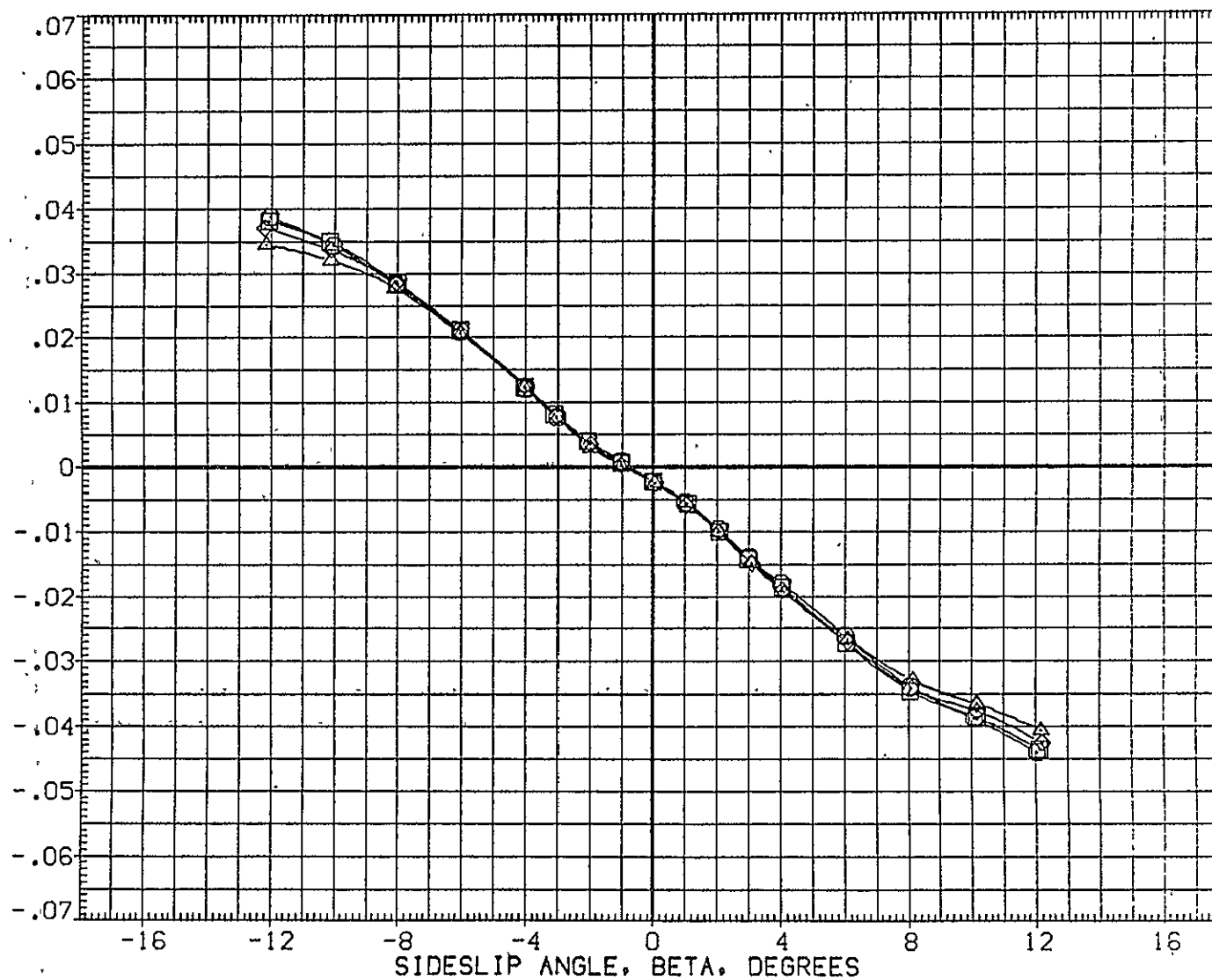
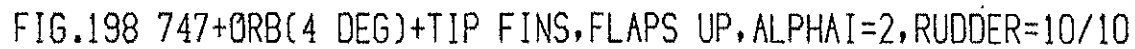


FIG.197 747+ORB(4 DEG)+TIP FINS,FLAPS UP,ALPHA1=6,RUDDER=10/10

ORB

1. The first step is to identify the problem or question that needs to be answered. This involves understanding the context and the specific information required.

SIDE FORCE COEFFICIENT, CY

SYMBOL	MACH	PARAMETRIC VALUES				REFERENCE INFORMATION		
		ALPHA1	2.000	STAB	-2.000	SREF	5500.0000	SQ.FT.
○	.300	RUD-U	10.000	RUD-L	10.000	LREF	327.8000	IN.
□	.500	ELV-1B	.000	ELV-0B	3.000	BREF	2348.0000	IN.
◇	.600	S1-2	.000	S3-4	.000	XMRP	1339.9100	IN. XC
△	.700	S5-6	.000	10RB	4.000	YMRP	.0000	IN. YC
						ZMRP	190.7500	IN. ZC
						SCALE	.0300	

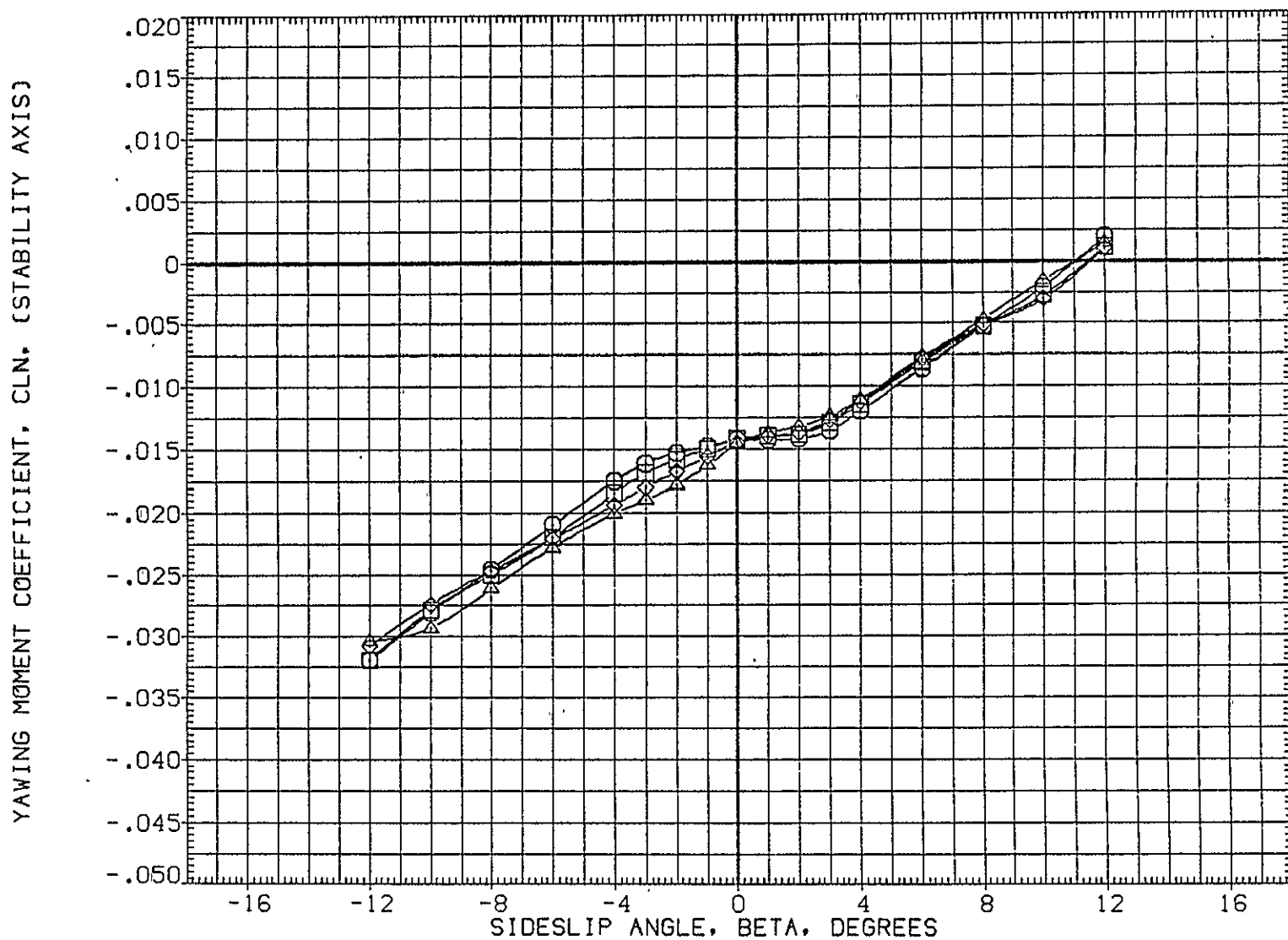


FIG.198 747+0RB(4 DEG)+TIP FINS,FLAPS UP,ALPHA1=2,RUDDER=10/10

TOTAL

CA5 K1 F0 H15.6 V9.1 (PLUS. ORB TC5 AT38.3)(RGM122)

SYMBOL	MACH	PARAMETRIC VALUES
○	.300	ALPHA1 2.000 STAB -2.000
□	.500	RUD-U 10.000 RUD-L 10.000
◇	.600	ELV-1B .000 ELV-0B 3.000
△	.700	S1-2 .000 S3-4 .000
		S5-6 .000 IORB 4.000

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

ROLLING MOMENT COEFFICIENT, CSL, (STABILITY AXIS)

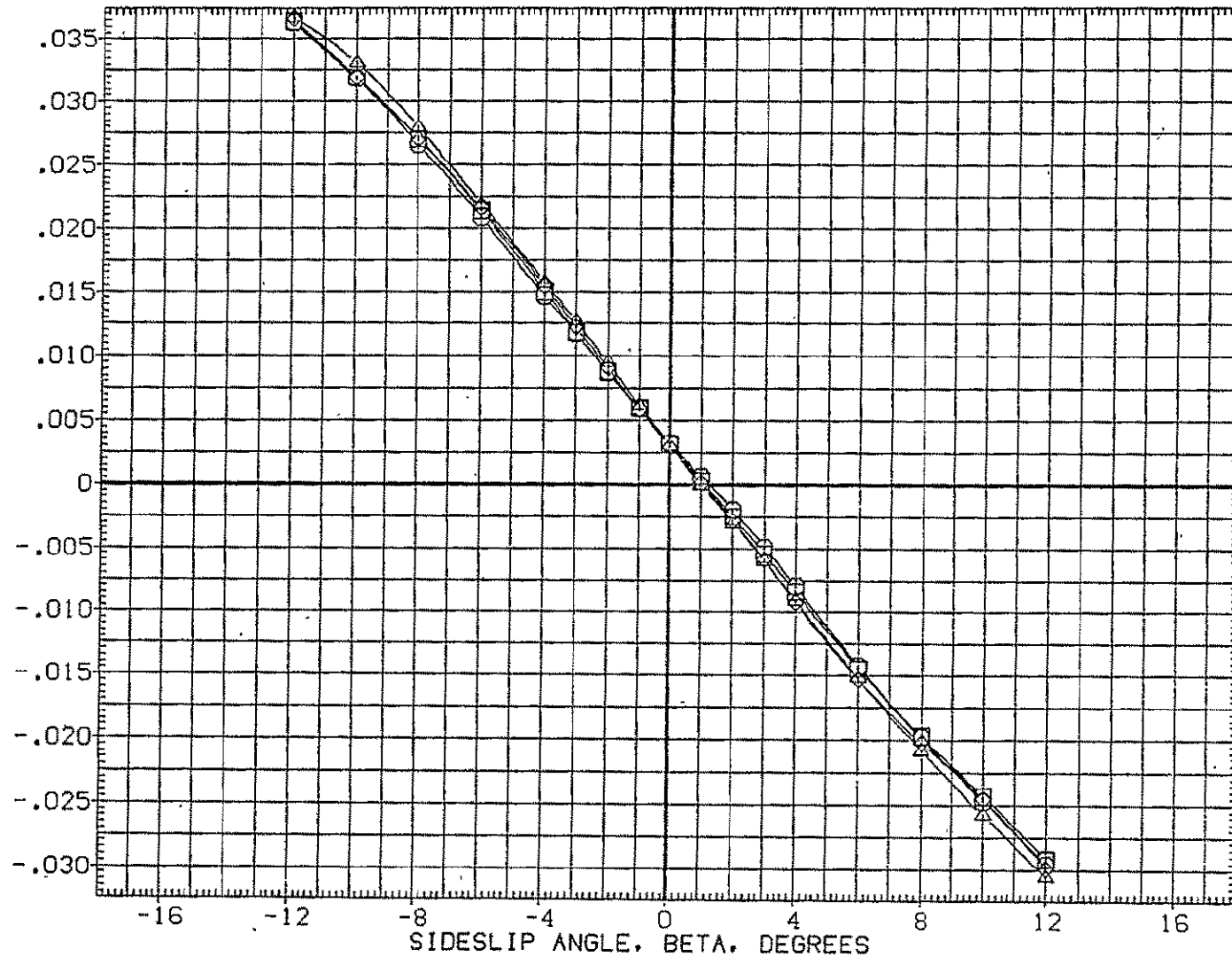


FIG.198 747+ORB(4 DEG)+TIP FINS,FLAPS UP,ALPHA1=2,RUDDER=10/10

TOTAL

SYMBOL	MACH	PARAMETRIC VALUES				REFERENCE INFORMATION	
		ALPHA1	2.000	STAB	-2.000	SREF	5500.0000 SQ.FT.
○	.300	RUD-U	10.000	RUD-L	10.000	LREF	327.8000 IN.
□	.500	ELV-1B	.000	ELV-0B	3.000	BREF	2348.0000 IN.
◇	.600	S1-2	.000	S3-4	.000	XMRP	1339.9100 IN. XC
△	.700	S5-6	.000	10RB	4.000	YMRP	.0000 IN. YC
						ZMRP	190.7500 IN. ZC
						SCALE	.0300

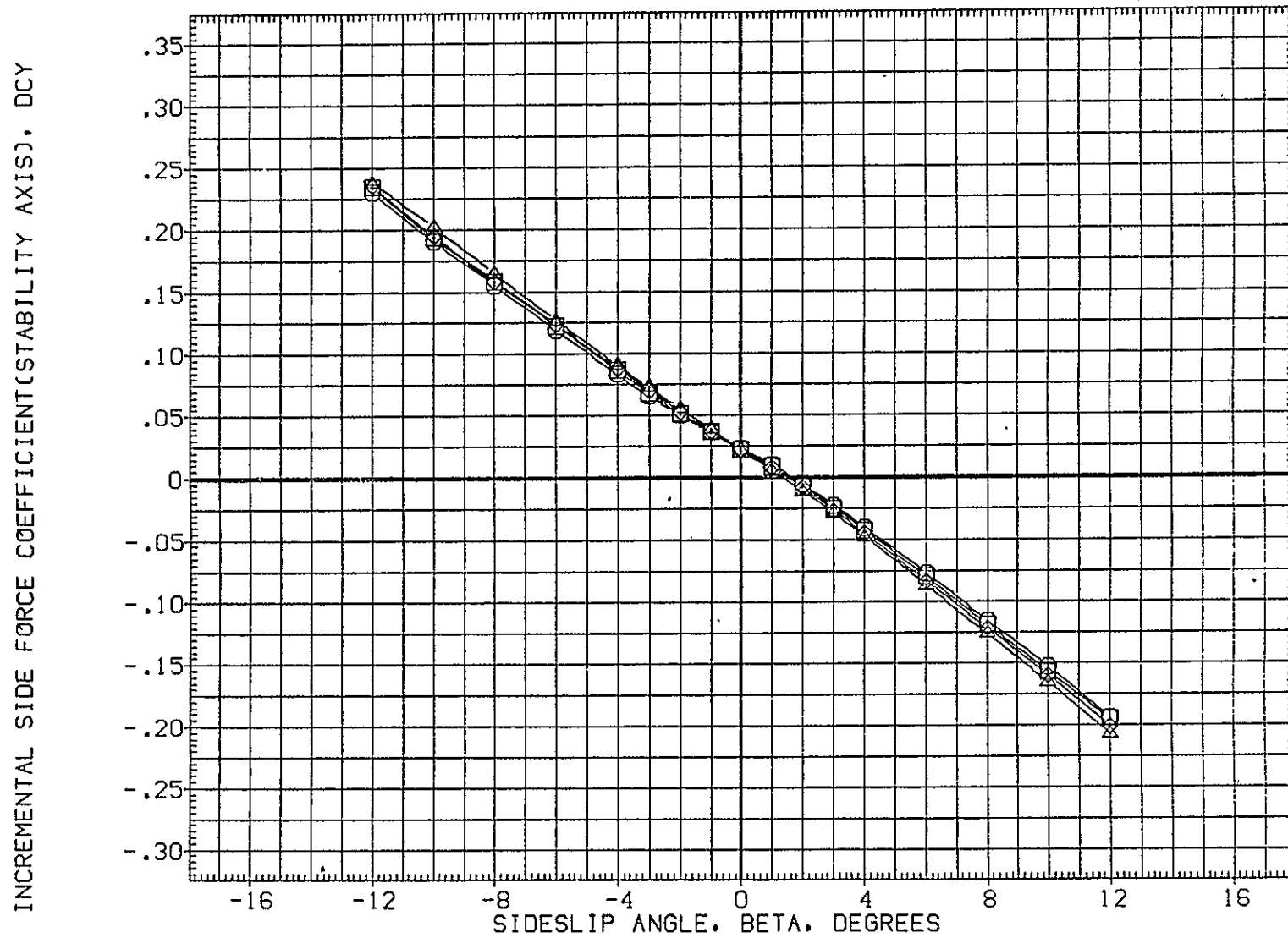


FIG.199 747+0RB(4 DEG)+TIP FINS,FLAPS UP,ALPHA1=2,RUDDER=10/10

CA5 K1 F0 H15.6 V9.1 MINUS 0RB TC5 AT38.3 (BGM122)

SYMBOL	MACH	PARAMETRIC VALUES				REFERENCE INFORMATION		
○	.300	ALPHA1	2.000	STAB	-2.000	SREF	5500.0000	50. FT.
□	.500	RUD-U	10.000	RUD-L	10.000	LREF	327.8000	IN.
◇	.600	ELV-1B	.000	ELV-0B	3.000	BREF	2348.0000	IN.
△	.700	S1-2	.000	S3-4	.000	XMRF	1339.9100	IN. XC
		S5-6	.000	10RB	4.000	YMRF	.0000	IN. YC
						ZMRF	190.7500	IN. ZC
						SCALE	.0300	

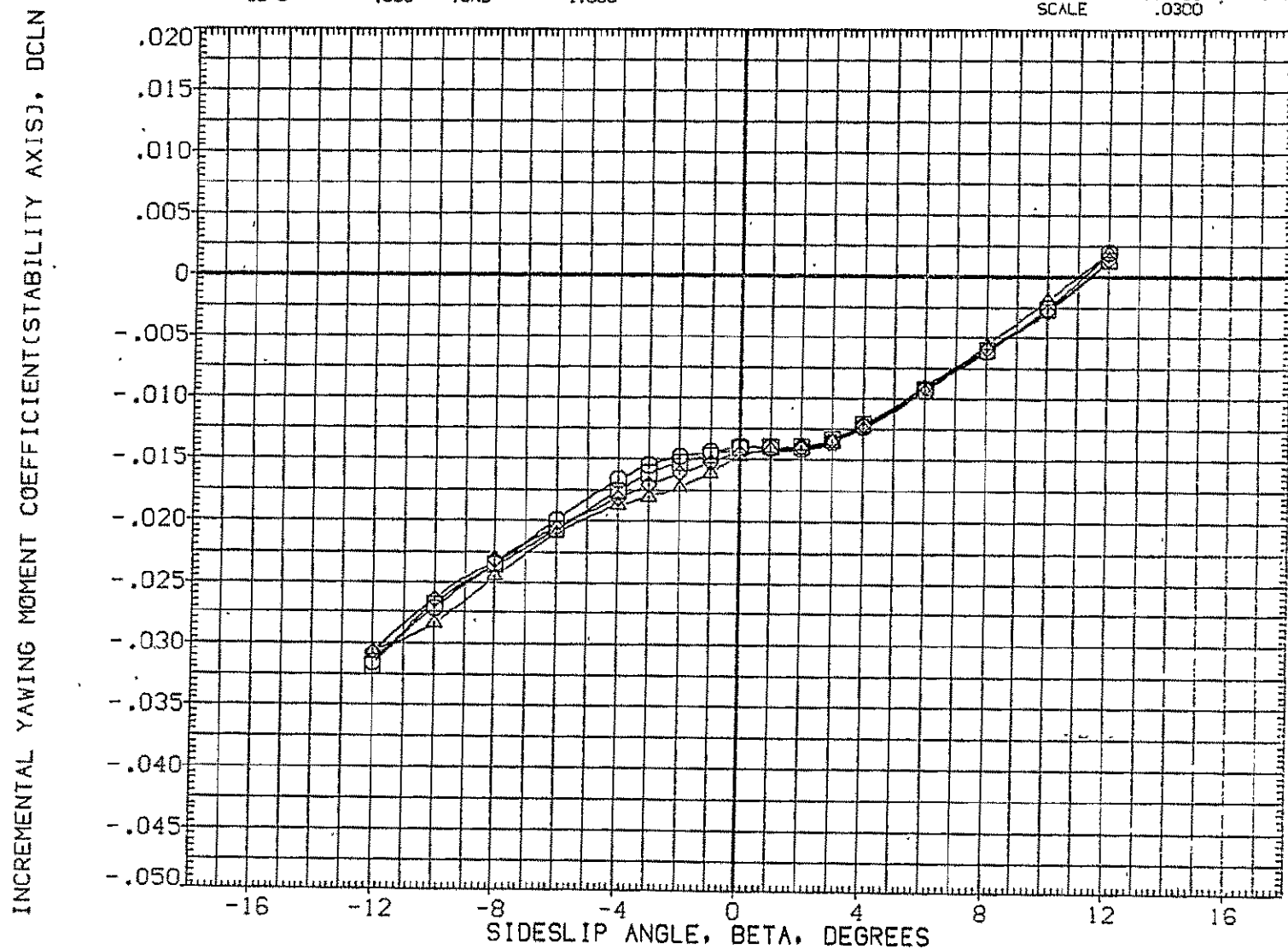


FIG.199 747+0RB(4 DEG)+TIP FINS,FLAPS UP,ALPHA1=2,RÜDDER=10/10

747

SYMBOL	MACH	PARAMETRIC VALUES
○	.300	ALPHA I 2.000 STAB -2.000
□	.500	RUD-U 10.000 RUD-L 10.000
◇	.600	ELV-1B .000 ELV-0B 3.000
△	.700	S1-2 .000 S3-4 .000
		S5-6 .000 TORB 4.000

REFERENCE INFORMATION		
SREF	5500.0000	SQ.FT.
LREF	327.8000	IN.
BREF	2348.0000	IN.
XMRP	1339.9100	IN. XC
YMRP	.0000	IN. YC
ZMRP	190.7500	IN. ZC
SCALE	.0300	

INCREMENTAL ROLLING MOMENT COEFFICIENT(STABILITY AXIS), DC SL

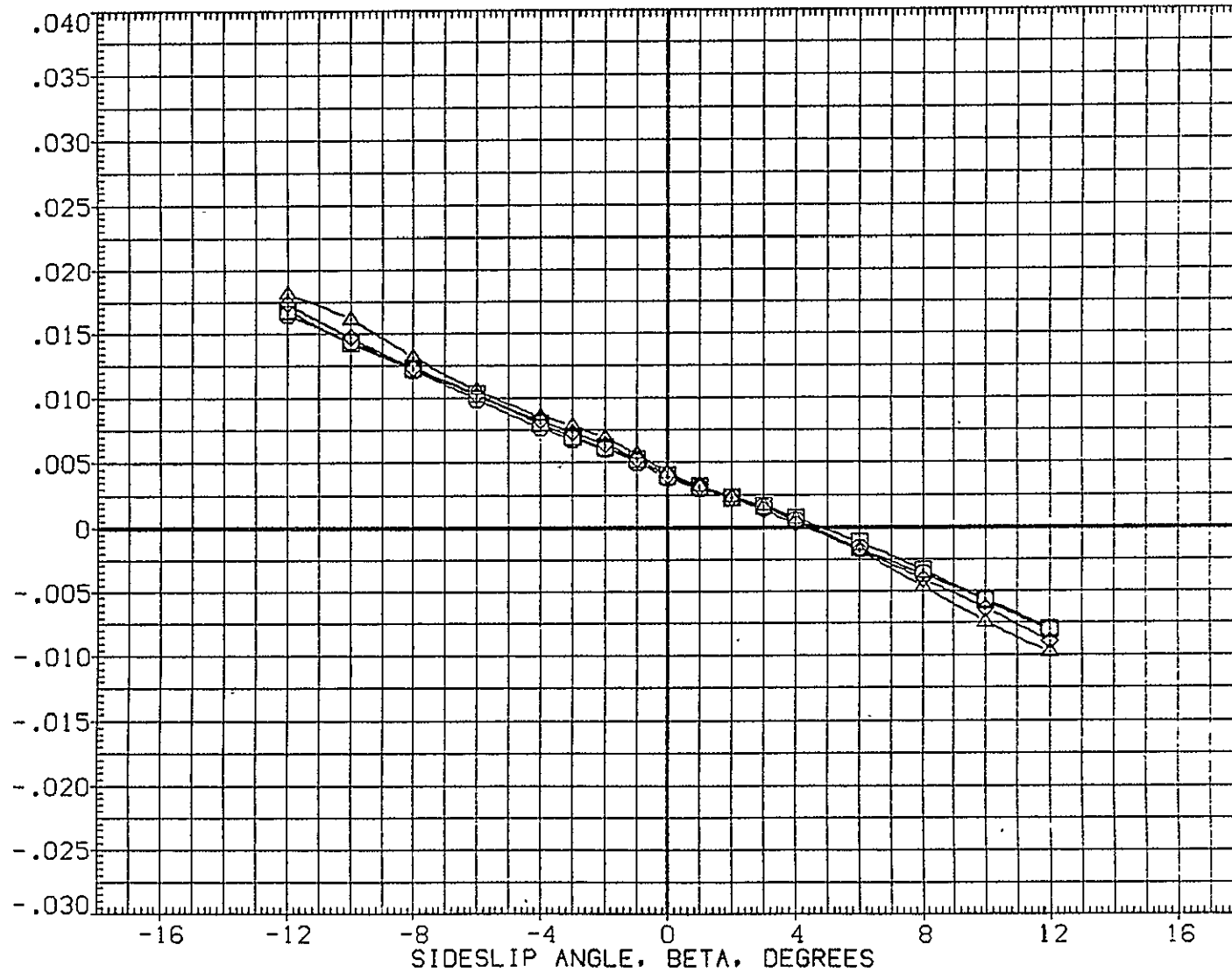


FIG.199 747+0RB(4 DEG)+TIP FINS,FLAPS UP,ALPHA I=2,RUDDER=10/10

CA5 ORB TC5 AT38.3 (PRES. K1 F0 H15.6 V9.1)(XGM122)

SYMBOL	MACH	PARAMETRIC VALUES				REFERENCE INFORMATION	
○	.301	ALPHA1	2.000	STAB	-2.000	SREF	2690.0000 SQ.FT.
□	.499	RUD-U	10.000	RUD-L	10.000	LREF	474.8100 IN.
◇	.600	ELV-1B	.000	ELV-OB	3.000	BREF	936.6800 IN.
△	.700	S1-2	.000	S3-4	.000	XMRP	1109.0000 IN. X0
		S5-6	.000	IORB	4.000	YMRP	.0000 IN. Y0
						ZMRP	375.0000 IN. Z0
						SCALE	.0300

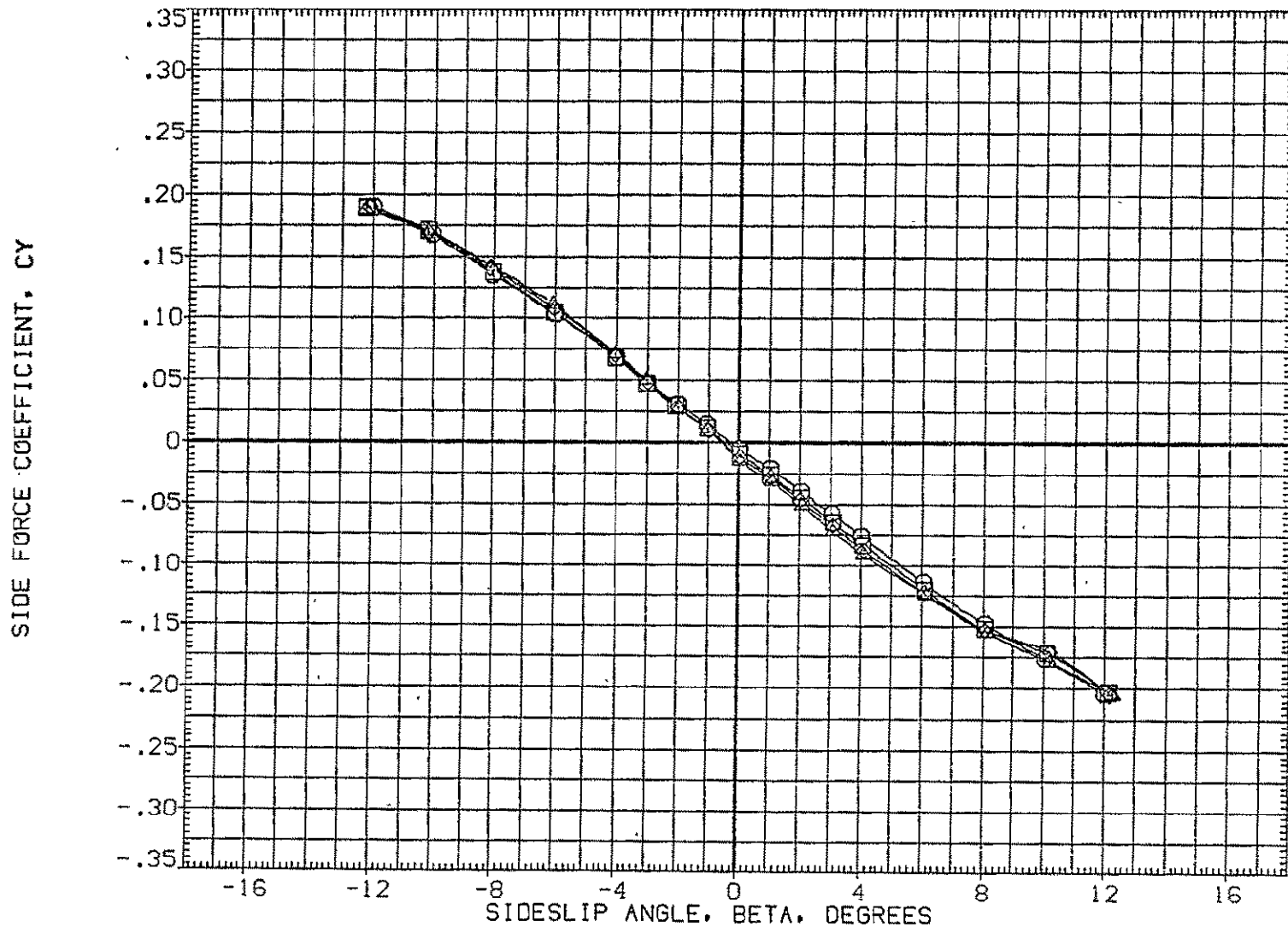


FIG.200 747+ORB(4 DEG)+TIP FINS,FLAPS UP,ALPHA1=2,RUDDER=10/10

ORB

SYMBOL	MACH	PARAMETRIC VALUES
○	.301	ALPHA I 2.000 STAB -2.000
□	.499	RUD-U 10.000 RUD-L 10.000
◇	.600	ELV-1B .000 ELV-0B 3.000
△	.700	S1-2 .000 S3-4 .000
		S5-6 .000 10RB 4.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XMRP	1109.0000	IN. X0
YMRP	.0000	IN. Y0
ZMRP	375.0000	IN. Z0
SCALE	.0300	

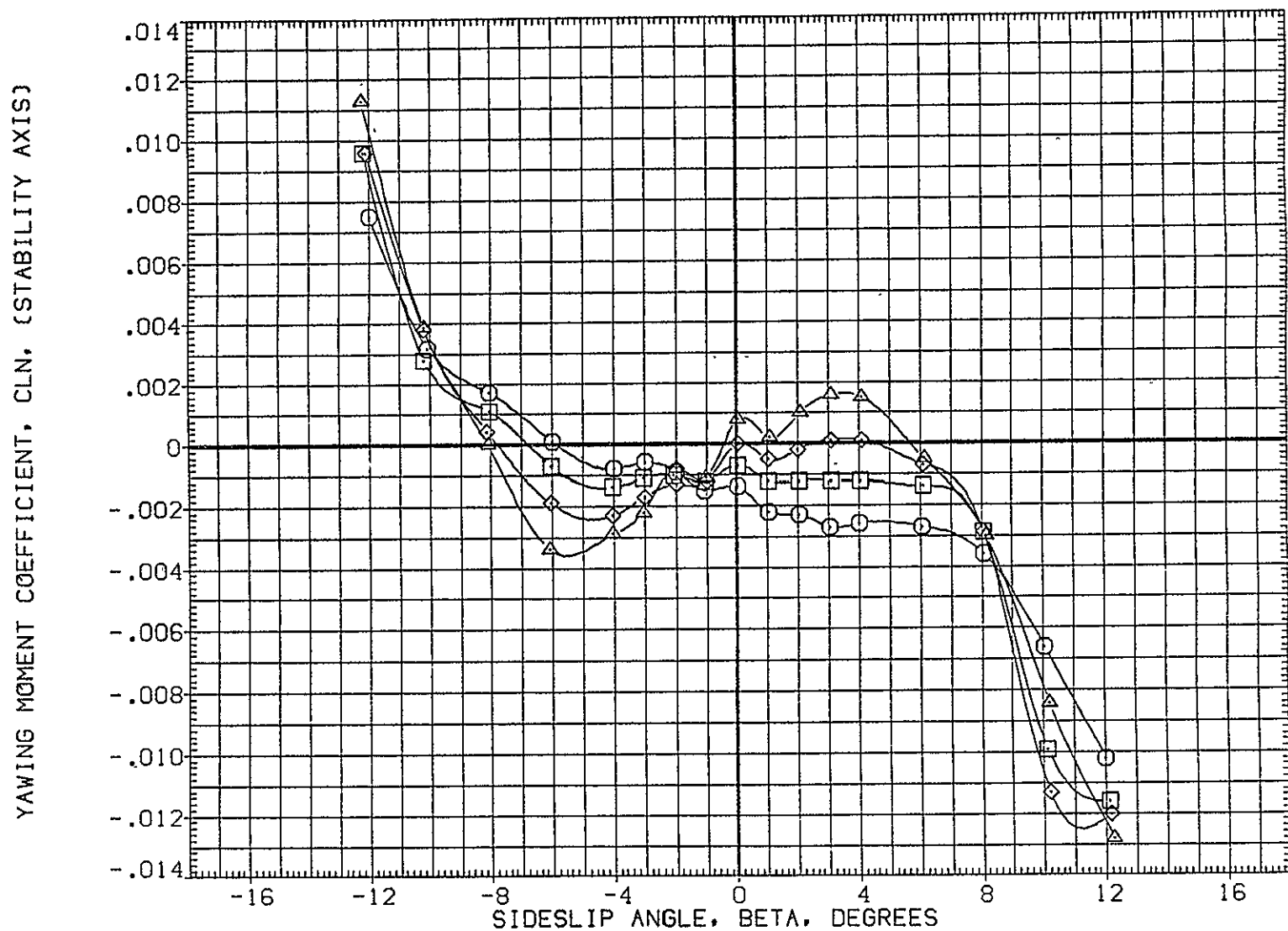


FIG.200 747+0RB(4 DEG)+TIP FINS,FLAPS UP,ALPHA I=2,RUDDER=10/10

0RB

CA5 ORB TC5 AT38.3 (PRES. K1 FO H15.6 V9.1)(XGM122)

SYMBOL	MACH	PARAMETRIC VALUES			
○	.301	ALPHA1	2.000	STAB	-2.000
□	.499	RUD-U	10.000	RUD-L	10.000
◇	.600	ELV-1B	.000	ELV-OB	3.000
△	.700	S1-2	.000	S3-4	.000
		S5-6	.000	10RB	4.000

REFERENCE INFORMATION		
SREF	2690.0000	SQ.FT.
LREF	474.8100	IN.
BREF	936.6800	IN.
XM RP	1109.0000	IN. X0
YM RP	.0000	IN. Y0
ZM RP	375.0000	IN. Z0
SCALE	.0300	

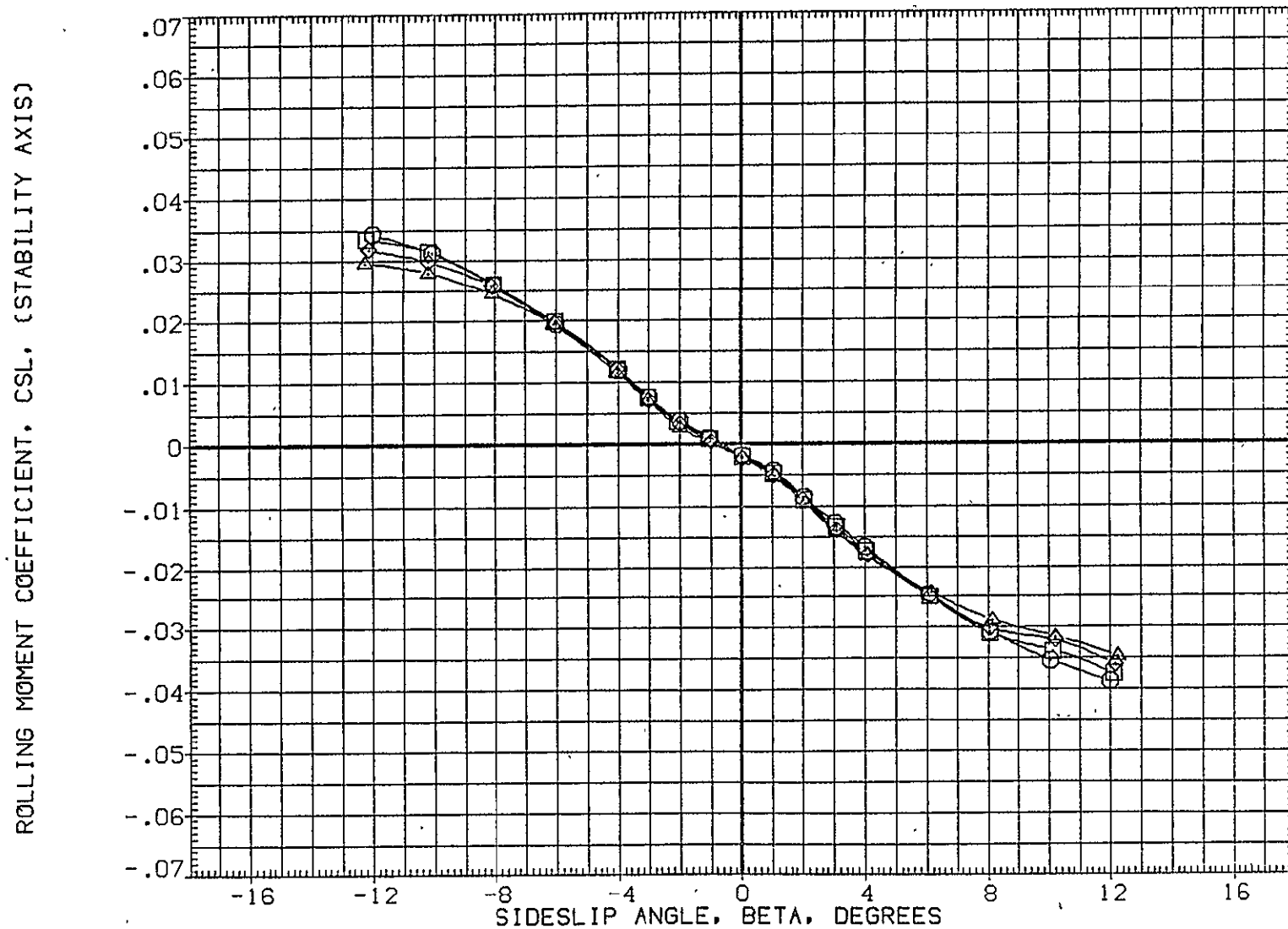


FIG.200 747+ORB(4 DEG)+TIP FINS,FLAPS UP,ALPHA1=2,RUDDER=10/10

ORB